SONY

CAMERA CONTROL UNIT

CCU-700A
CCU-700AP

SDI INPUT BOARD
BKP-7312

MAINTENANCE MANUAL
Volume 1 2nd Edition (Revised 2)
Serial No. 15001 and Higher (UC)
Serial No. 45001 and Higher (CE)
Serial No. 50001 and Higher (UC/CE)

⚠警告

このマニュアルは，サービス専用です。
お客様が，このマニュアルに記載された設置や保守，点検，修理など行うと感電や火災，人身事故につながることがあります。
危険をさけるため，サービストレーニングを受けた技術者のみご使用ください。

⚠WARNING

This manual is intended for qualified service personnel only.
To reduce the risk of electric shock, fire or injury, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so. Refer all servicing to qualified service personnel.

⚠WARNUNG

Die Anleitung ist nur für qualifiziertes Fachpersonal bestimmt.
Alle Wartungsarbeiten dürfen nur von qualifiziertem Fachpersonal ausgeführt werden. Um die Gefahr eines elektrischen Schlages, Feuergefahr und Verletzungen zu vermeiden, sind bei Wartungsarbeiten strikt die Angaben in der Anleitung zu befolgen. Andere als die angegeben Wartungsarbeiten dürfen nur von Personen ausgeführt werden, die eine spezielle Befähigung dazu besitzen.

⚠AVERTISSEMENT

Ce manual est destiné uniquement aux personnes compétentes en charge de l’entretien. Afin de réduire les risques de décharge électrique, d’incendie ou de blessure n’effectuer que les réparations indiquées dans le mode d’emploi à moins d’être qualifié pour en effectuer d’autres. Pour toute réparation faire appel à une personne compétente uniquement.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.
Dispose of used batteries according to the manufacturer’s instructions.

ATTENTION

Il y a danger d’explosion s’il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d’un type équivalent recommandé par le constructeur.
Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Vorsicht!

Explosionsgefahr bei unsachgemäßem Austausch der Batterie.

Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ähnlichen Typ.
Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

ADVARSEL!

Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

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Manual Structure

Purpose of this manual

This manual is the maintenance manual for Camera Control Unit CCU-700A/700AP. This manual describes the information items necessary when the unit is supplied and installed, items on maintenance, and items that premise the service based on the components parts such as alignment, schematic diagrams, board layouts and spare parts list, assuming use of system and service engineers.

Contents

This followings are summaries of the each section for understanding the manual.

Maintenance Manual Volume 1

Section 1. Installation
Describes information about connector input/output signals, instance of configuration and function of internal switches.

Section 2. Service Overview
Describes information about replacement of part and notes on services.

Section 3. Electrical Alignment
Describes electrical adjustment.

Maintenance Manual Volume 2

Section1. Spare Parts
Describes parts list, exploded views, supplied accessories and fixtures list used in the unit.

Section 2. Semiconductor Pin Assignments
Describes function diagrams and pin names of semiconductor used in the unit.

Section 3. Block Diagrams
Describes overall block diagram and the block diagrams for every circuit board.

Section 4. Schematic Diagrams
Describes schematic diagrams for every circuit board.

Section 5. Board Layouts
Describes board layouts for every circuit board.

Relative manuals

Besides this maintenance manual the following manuals are available for this unit.

- **Operation Manual (Supplied with this unit)**
  This manual is necessary for application and operation of this unit.

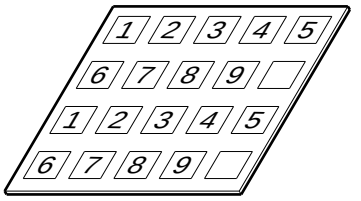
- **System manual (Not supplied with this unit)**
  This manual is necessary for connection and operation of this unit and other peripheral equipments.
  If this manual is required, please contact Sony service organization

Section 1
Installation

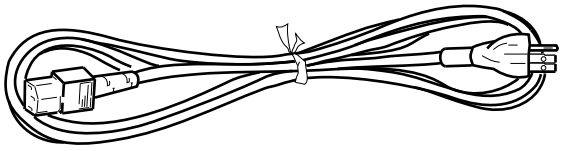
1-1. Supplied Accessories

1-1-1. CCU-700A/700AP Supplied Accessories

- **Remote indicator (1)** (Sony Part No. A-8278-054-A)

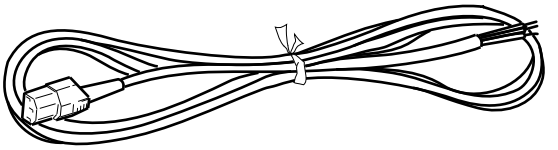


- ⚠ **Power cord (1)**
  CCU-700A (Sony Part No. 1-551-812-11)



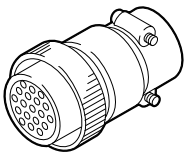
With 3P-plug
Cable length about 2.7 m
Rated Voltage 125 V
Rated Current 10 A

CCU-700AP (Sony Part No. 1-590-910-11)

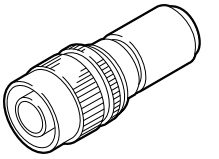


Without plug
Cable length about 2.5 m
Rated Voltage 250 V
Rated Current 10 A

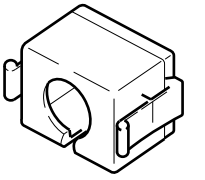
- **19-pin plug (1)** (Sony Part No. 1-506-767-11)



- **4-pin plug (1)** (Sony Part No. 1-506-343-11)



- **Plug holder (1)**
  CCU-700A (Sony Part No. 2-990-242-01)
  CCU-700AP (Sony Part No. 3-170-078-01)



- **Fuses**
  CCU-700A
  - ⚠ **3.15 A, 125 V (1)** (Sony Part No. 1-532-745-11)
  - ⚠ **6.3 A, 125 V (1)** (Sony Part No. 1-532-748-11)
  - ⚠ **T1 AH, 250 V (1)** (Sony Part No. 1-576-225-41)

  CCU-700AP
  - ⚠ **T1 AH, 250 V (1)** (Sony Part No. 1-576-225-41)
  - ⚠ **T4 AH, 250 V (1)** (Sony Part No. 1-576-231-41)
  - ⚠ **T3.15 AH, 250 V (1)** (Sony Part No. 1-576-230-11)

- **Operation manual (1)**
- **Maintenance manual Vol-1, Vol-2 (1 set)**

1-1-2. BKP-7312 Supplied Accessories

- **Coaxial cable (2)** (Sony Part No. 1-765-696-11)
- **DA1 sub harness (1)** (Sony Part No. 1-955-432-11)
- **DA2 sub harness (2)** (Sony Part No. 1-955-433-11)
- **Ret label (1)** (Sony Part No. 3-694-267-01)

1-2. Connectors and Cables

1-2-1. Connector Input and Output Signals

Main connector input and output signals are shown below.

Rear panel

BNC connector : 75 Ω

[Input signal]

- RET 1 to 4 — 140 IRE (1.0 V p-p) VBS or VS, loop through
- REFERENCE — 40 IRE (300 mV p-p), VBS, Burst sync. loop through
- PROMPTER — 140 IRE (1.0 V p-p), VBS, loop through
- DIGITAL RET 1,2 (When BKP-7312 is connected.) — D1 format serial digital, SMPTE 259 M/ITU-R BT.656

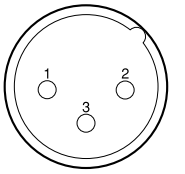
[Output signal]

- R — 700 mV p-p
- G — 700 mV p-p
- B — 700 mV p-p
- Y — 100 IRE, 40 IRE (sync) (for CCU-700A); 700 mV p-p, 300 mV p-p (sync) (for CCU-700AP)
- R-Y — 700 mV p-p (75 % Color bars) (for CCU-700A); 525 mV p-p (75 % Color bars) (for CCU-700AP)
- B-Y — 700 mV p-p (75 % Color bars) (for CCU-700A); 525 mV p-p (75 % Color bars) (for CCU-700AP)
- CHARACTER — 210 mV p-p, 300 mV p-p (sync)
- WF 1, 2 — 100 IRE/140 IRE (ENC) (for CCU-700A); 700 mV p-p/1.0 V p-p (ENC) (for CCU-700AP)
- PIX 1, 2 — 140 IRE (1.0 V p-p)
- VBS 1 to 3 — 140 IRE (1.0 V p-p)
- SYNC — 300 mV p-p
- DIGITAL OUTPUT 1,2,3 (When BKP-7311 is connected.) — D1 format serial digital, SMPTE 259 M/ITU-R BT.656

[Input/Output signal]

COAX	(Refer to Section 1-5.)
TRIAX	King type (for CCU-700A) Fischer type (for CCU-700AP)

MIC OUTPUT CH1/CH2 (3P, MALE)



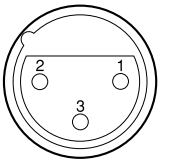
(EXTERNAL VIEW)

(0 dBu=0.775 Vrms)

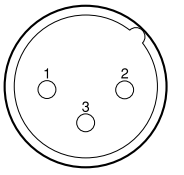
No.	Signal	Specifications
1	MIC OUT (G)	0 dBu/-20 dBu (Selectable with S201, S301/AT board)
2	MIC OUT (Y)	
3	MIC OUT (X)	

RTS IN/OUT

RTS IN (3P, FEMALE)



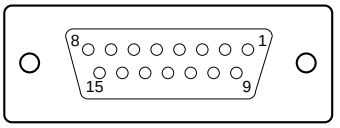
RTS OUT (3P, MALE)



(EXTERNAL VIEW)

No.	Signal	Specifications
1	RTS (COMMON)	2.0 Vp-p 200 Ω
2	RTS (ENG)	
3	RTS (PROD)	

MIC REMOTE (15P, FEMALE)



(EXTERNAL VIEW)

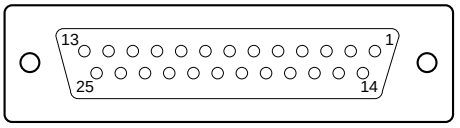
(0 dBu=0.775 Vrms)

No.	Signal		Specifications
1	+5.5 V OUT		Max. 250 mA Fuse/AT board
2	TALLY GND		GND for TALLY
3	G TALLY OUT		Q2841 (NPN)/AT board ON (GND): Max.30 mA
4	R TALLY OUT		Q2840 (NPN)/AT board ON (GND): Max.30 mA
5	CHU MIC1 AMP GAIN IN	CONT2	*1)
6		CONT1	
7		CONT0	
8	MIC1 GAIN CONT ON/OFF IN		L: AUX MIC GAIN CONTROL
9	GND		GND for +5.5V
10	TALLY OUT		R/G TALLY OUT Q2842(NPN)/AT board ON (GND): Max.30 mA
11	NC		No connection
12	CHU MIC2 AMP GAIN IN	CONT2	*1)
13		CONT1	
14		CONT0	
15	MIC2 GAIN CONT ON/OFF IN		L: AUX MIC GAIN CONTROL

*1) CHU MIC 1/2 AMP GAIN

CONT0	CONT1	CONT2	CHU MIC AMP GAIN
H	H	H	60 dBu
L	H	H	50 dBu
H	L	H	40 dBu
L	L	H	30 dBu
H	H	L	20 dBu

INTERCOM REMOTE (25P, FEMALE)



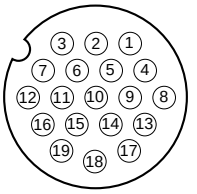
(EXTERNAL VIEW)

(0 dBu=0.775 Vrms)

No.	Signal	Specifications
1	+5.5 V OUT	Max. 250 mA Fuse/AT board
2	CAMERA No. CK OUT	
3	CAMERA No. SPARE OUT	
4	TALLY GND	GND for TALLY
5	G TALLY OUT	Q2841 (NPN)/AT board ON (GND): Max.30 mA
6	R TALLY OUT	Q2840 (NPN)/AT board ON (GND): Max.30 mA
7	TALLY OUT	R/G TALLY OUT Q2842 (NPN)/AT board ON (GND): Max.30 mA
8	CALL OUT	Q1010 (NPN)/AT board ON (GND): Max.30 mA
9	INCOM TALK (G) IN	*2) -20 dBu (CARBON MIC) -60 dBu (DYNAMIC MIC)
10	INCOM TALK (Y) IN	
11	INCOM TALK (X) IN	
12	PRIVATE IN	L: INCOM PRIVATE ON
13	INCOM OFF OUT	L: CHU INCOM MIC OFF
14	GND	GND for +5.5V
15	CAMERA No. DATA OUT	
16	CAMERA No. STROBE OUT	
17	INCOM REAR PANEL TALK ON IN	*2) L: INCOM REAR PANEL TALK ON
18	ENG IN	L: ENG INTERRUPT ON
19	PROD IN	L: PROD INTERRUPT ON
20	PGM (G) OUT	*2) MAX. 12 dBu
21	PGM (Y) OUT	
22	PGM (X) OUT	
23	INCOM RECEIVE (G) OUT	*2) MAX. 12 dBu
24	INCOM RECEIVE (Y) OUT	
25	INCOM RECEIVE (X) OUT	

*2) To use these interface signals, modification for AT board is required. For details, please consult your Sony service representative.

INTERCOM/TALLY/PGM (19P, MALE)

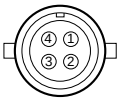


(EXTERNAL VIEW)

(0 dBu=0.775 Vrms)

No.	Signal	Specifications
1	PGM (X) IN	-20 dBu/0 dBu (Selectable with S2081/AT board)
2	PGM (Y) IN	
3	PGM (G) IN	
4	R TALLY (X) IN	ON: 24 Vdc, TTL (H), SHORT OFF: 0 Vdc, TTL (L), OPEN
5	R TALLY (Y) IN	
6	G TALLY (X) IN	ON: 24 Vdc, TTL (H), SHORT OFF: 0 Vdc, TTL (L), OPEN
7	G TALLY (Y) IN	
8	ENG (R) (X) OUT	ENG SYSTEM RECEIVE 0 dBu BALANCED
9	ENG (R) (Y) OUT	
10	GND	CHASSIS GND
11	PROD (R) (X) OUT	PROD SYSTEM RECEIVE 0 dBu BALANCED
12	PROD (R) (Y) OUT	
13	ENG (T) (X) IN	ENG SYSTEM TALK 0 dBu BALANCED
14	ENG (T) (Y) IN	
15	PROD (T) (X) IN	PROD SYSTEM TALK 0 dBu BALANCED
16	PROD (T) (Y) IN	
17	ENG (G)	GND for ENG
18	NC	No connection
19	PROD (G)	GND for PROD

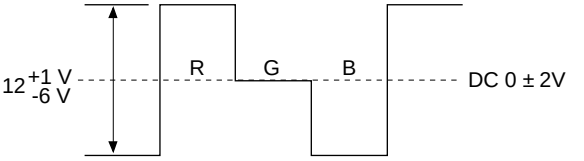
WF MODE (4P, FEMALE)



(EXTERNAL VIEW)

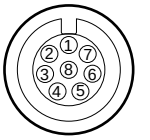
No.	Signal	Specifications
1	SEQ CONT OUT (G)	OPEN COLLECTOR + (PNP) /- (NPN) (Selectable with S1102/VA board)
2	SEQ CONT OUT (X)	
3	STAIR CASE OUT (X)	*3)
4	STAIR CASE OUT (G)	GND for STAIR CASE

*3) Stair Case signal



REMOTE (8P, FEMALE)

RCP/CNU
AUX



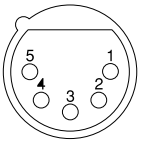
(EXTERNAL VIEW)

No.	Signal	Specifications
1	TX (+)	CCU SERIAL DATA
2	TX (-)	
3	RX (+)	*4)
4	RX (-)	
5	TX GND	GND for TX
6	POWER (+) OUT	RCP POWER, +30 V
7	POWER (-) OUT	GND for POWER
8	SPARE	
	CHASSIS GND	CHASSIS GND

*4) RCP/CNU : RCP/CNU/BVP/MSU/VCS SERIAL DATA
AUX : AUX SERIAL DATA

Front Panel

INTERCOM (5P, FEMALE)



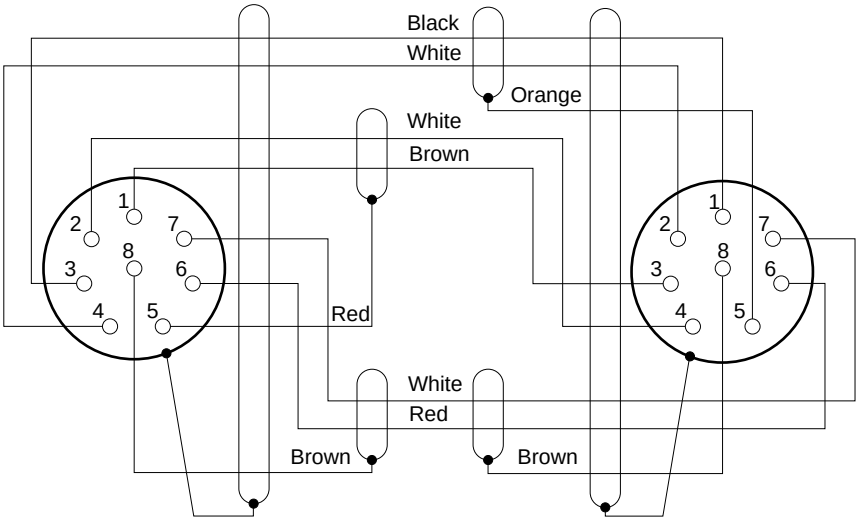
(EXTERNAL VIEW)

(0 dBu=0.775 Vrms)

No.	Signal	Specifications
1	INCOM (T) IN (Y)	-20 dBu (CARBON MIC)
2	INCOM (T) IN (X)	-60 dBu (DYNAMIC MIC)
3	INCOM (T) IN (G)	GND for INCOM
4	INCOM (R) OUT (X)	Max. 12 dBu
5	NC	No connection

1-2-2. Cable Wiring

CCA-5 Cable (for REMOTE connector)



1-2-3. Connection Connector

Connection made with the connector panels during installation or service, should be made with the connectors/ complete cable assemblies specified in the following list, or equivalent parts.

Connector name	Connection connector/cable
RET 1/2/3/4 REFERENCE PROMPTER R/G/B Y/R-Y/B-Y CHARACTER WF 1/2 PIX 1/2 VBS 1/2/3 SYNC (BNC)	 1-560-069-11 PLUG, BNC or B-B cable assembly (Cable length 1.5 m, option)
RTS IN (3P, FEMALE)	1-508-084-00 XLR, 3P MALE or CANNON XLR-3-12C equivalent
MIC CH1/CH2 RTS OUT (3P, MALE)	1-508-083-00 XLR, 3P FEMALE or CANNON XLR-3-11C equivalent
REMOTE MIC (15P, FEMALE)	1-506-582-11 D-SUB, 15P MALE or JAE DA-15PF-N equivalent
REMOTE INTERCOM (25P, FEMALE)	D-SUB, 25P MALE JAE DA-25PF-N equivalent
INTERCOM/TALLY/PGM (19P, MALE)	1-506-767-11 MULTI, 19P FEMALE (supplied)
WF MODE (4P, FEMALE)	1-506-155-00 PLUG, 4P MALE (supplied)
REMOTE (8P, FEMALE)	1-766-848-11 PLUG, 8P MALE or CCA cable assembly (option) CCA-5-10 (10 m) CCA-5-3 (3 m)
INCOM/PGM (5P, FEMALE)	1-508-370-11 XLR, 5P MALE or CANNON XLR-5-12C equivalent

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1-3. Installation

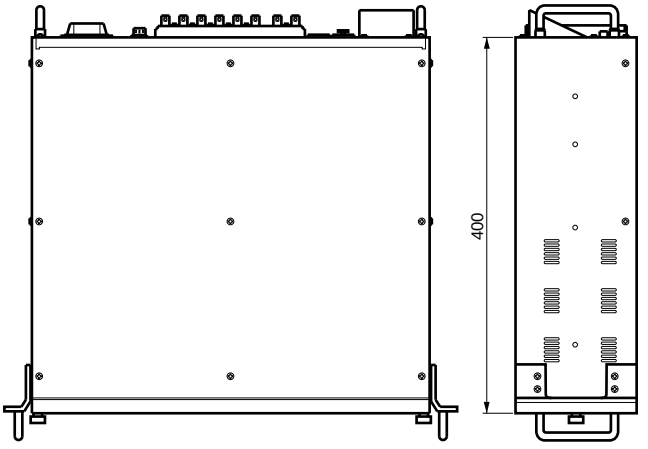
1-3-1. Installation Conditions

Operating temperature: 5 ˚C to +40 ˚C
Storage temperature: -20 ˚C to +50 ˚C
Humidity: No condense

- Install the unit in a location as dry and well-ventilated as possible.
- Do not install the unit in the following conditions.
  High temperature room or near the heat source
  Excessive dust or mechanical vibration
  Intense magnetic and electric field
  A place subjected to direct sunlight or strong light

Note on installation : Set the voltage selecters according to a destination.
As for the setting, refer to “2-1-6. Replacement of Power Unit”.

1-3-2. Outside Dimension



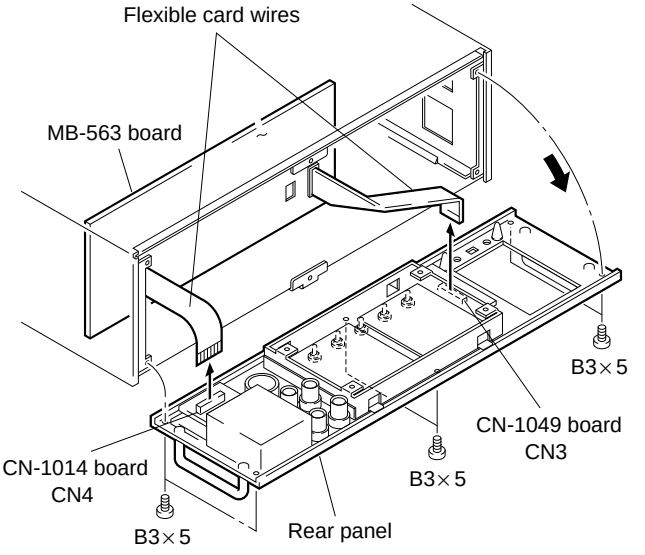
(Unit : mm)

1-3-3. Installation of BKP-7312

1. Set the S250-1 switch on the BKP-7312 to OFF.
2. Remove the six screws (B3×5) and then remove the rear panel.
3. Disconnect the connector CN4 on the CN-1014 board and the connector CN3 on the CN-1049 board.

Note

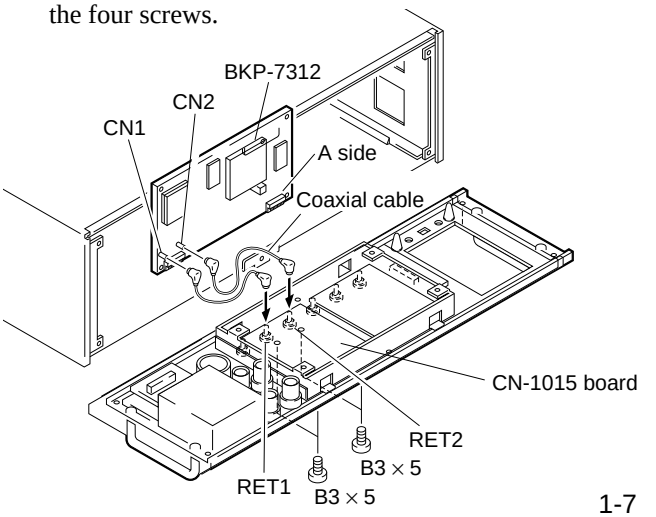
When disconnecting the flexible card wires, refer to “2-1-3. Disconnecting/Connecting of Flexible Card Wire.”



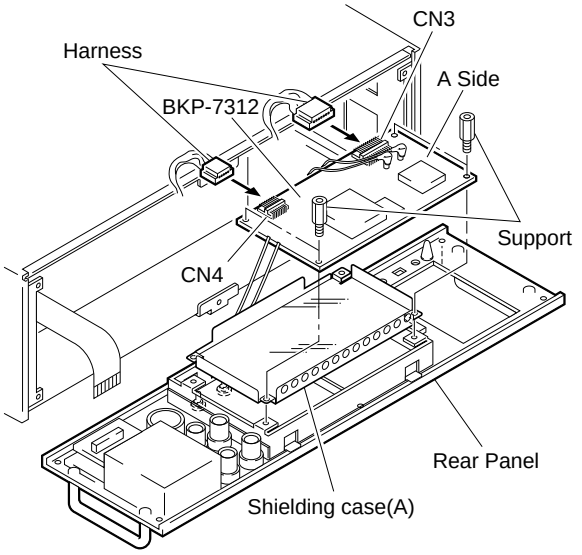
4. Connect the two coaxial cables.
   RET1/CN-1015 board — CN1/BKP-7312
   RET2/CN-1015 board — CN2/BKP-7312

Note

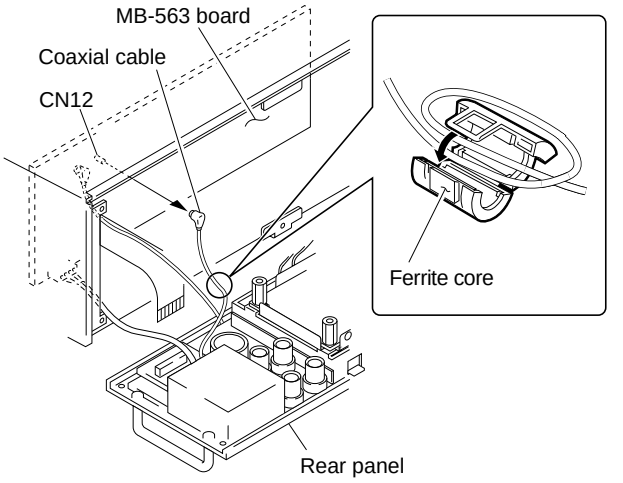
Removing the CN-1015 board makes cable connections easier. The CN-1015 board is secured with four screws from the rear panel.
When installing the board, apply locking compound to the four screws.



5. Connect the two harnesses (supplied with BKP-7312) to connectors CN3 and CN4 on the BKP-7312 respectively.
6. Install the Shielding case (A) assembly (supplied with BKP-7312) to the rear panel.
7. Fit the BKP-7312 with the A side face up to the rear panel using the four supports. Apply locking compound to the four supports.



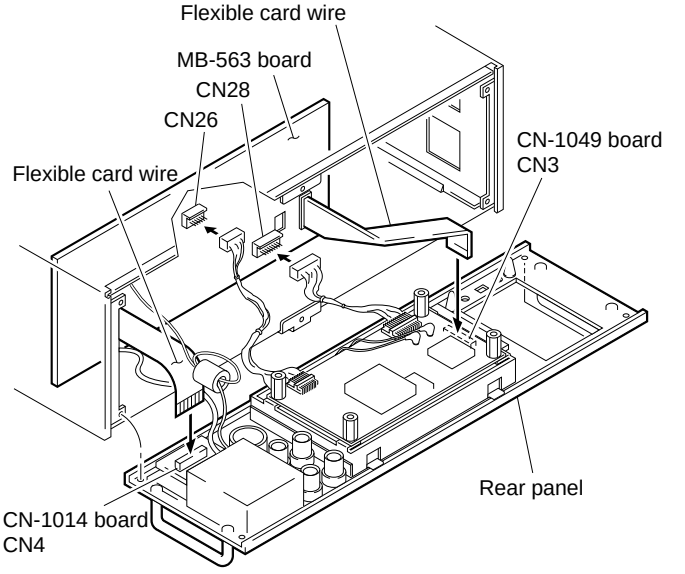
8. Disconnect the connector CN12 on the MB-563 board. Attach the ferrite core to the coaxial cable as the figure. Connect the connector CN12 to the MB-563 board.



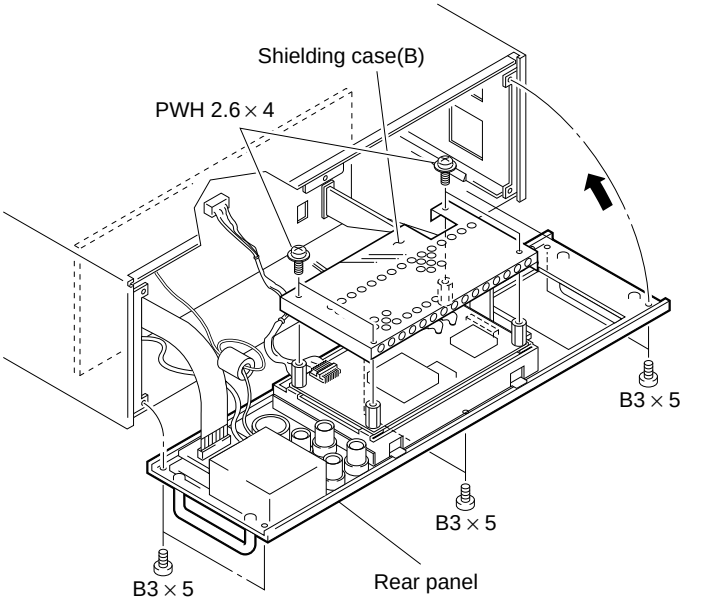
9. Connect the other ends of the harnesses to the connectors CN26 and CN28 on the MB-563 board respectively.
10. Connect the two flexible card wires to the connector CN4 on the CN-1014 board and the connector CN3 on the CN-1049 board.

Note

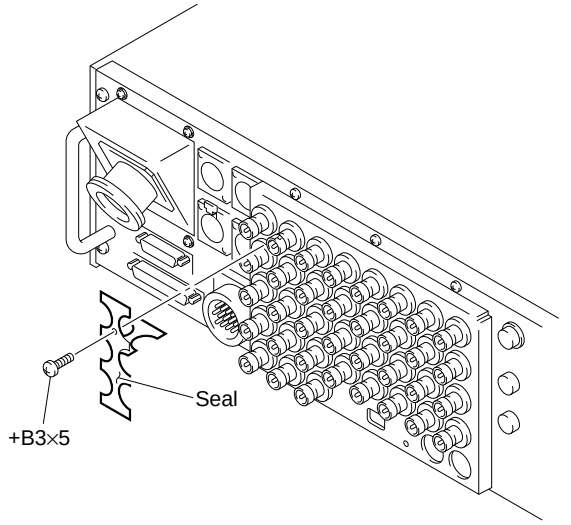
When connecting the flexible card wires, refer to "2-1-3. Disconnecting/Connecting of Flexible Card Wire."



11. Install the Shielding case (B) assembly (supplied with BKP-7312) to the BKP-7312 with the four screws (+PWH2.6×4).
12. Install the rear panel with the six screws (+B3×5).



13. Remove a screw (+B3×5) shown in the figure. And then fit the accessory seal using the screw (+B3×5).



1-3-4. How to Mount in 19-inch Rack

The unit can be mounted in a 19-inch EIA standard rack (height three unit).
Three kinds of rails are now available.

1. RMM-30 (standard product)
2. SUA-861 (standard product)
3. Accuride® slide rails (commercially available)

1. RMM-30 (1 set)

Applicable rack

The depth is 660 - 830 mm (26 - 32 3/4 inches) for 22" rail.

Installation

Refer to the installation manual supplied with the RMM-30.

Note

The slide rails of the RMM-30 is equivalent to the Accuride®'s 305A-22. If you use rails which are different in length, we recommend the Accuride® made.

2. SUA-861 (1 set)

Applicable rack

Sony SU-860 only

Installation

Refer to the installation manual supplied with the SUA-861.

3. Accuride® slide rail

Slide Rail: 1 set

Accuride®'s No. 305A-18 (454 mm) or
No. 305A-22 (556 mm)

Bracket: 4

Accuride®'s No. 5517-2

Inner member fixing screws (+B4×8): 6

Other screws, nuts

Use parts recommended by Accuride®.

Manufacture: Accuride, Inc.

UNITED STATES

• Accuride

12311 Shoemaker Avenue
Santa Fe Springs, CA 90670
TEL 213-903-0200
FAX 213-903-0208

• Accuride

Quality Drive
Charlotte, NC 28217
TEL 704-588-5880
FAX 704-588-6316

• Accuride

1930 Parco Avenue
Ontario, CA91761
TEL 714-923-9922
FAX 714-947-8586

WEST GERMANY

• Standard-Praezision GmbH

Postfach 1464
Werner-von-Siemens-Strasse 16-18
6252 Diez/Lahn West Germany
TEL 6432-6080
FAX 6432-60820

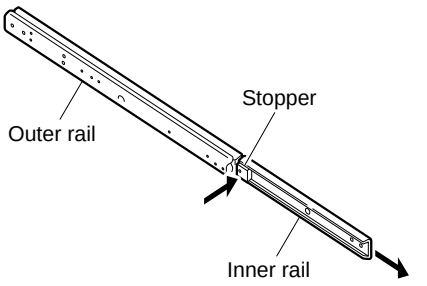
UNITED KINGDOM

• Accuride Limited

Lilliput Road
Brackmills Industrial Estate
Northampton, NN4 OAR
United Kingdom
TEL 604-761111
FAX 604-767190

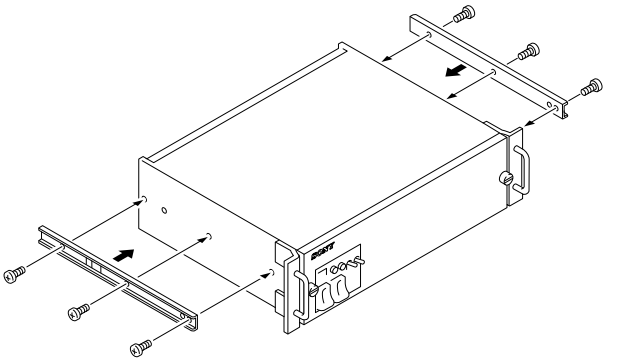
Installation

1. Pull out the inner rail while pressing the stopper.

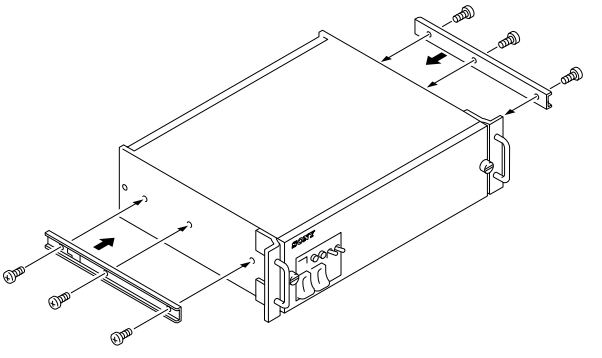


2. Fit the inner rail removed in step 1 to the unit using the six screws (+B4×8).

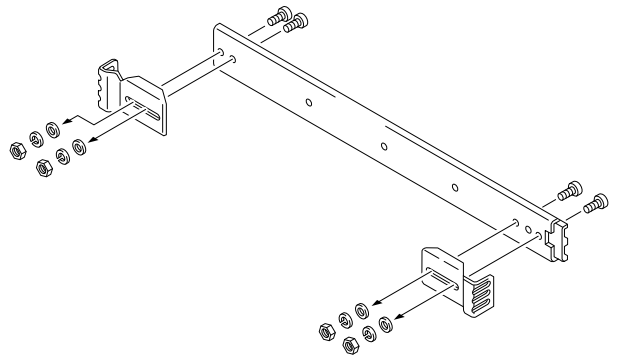
• Model 305A-22



• Model 305A-18

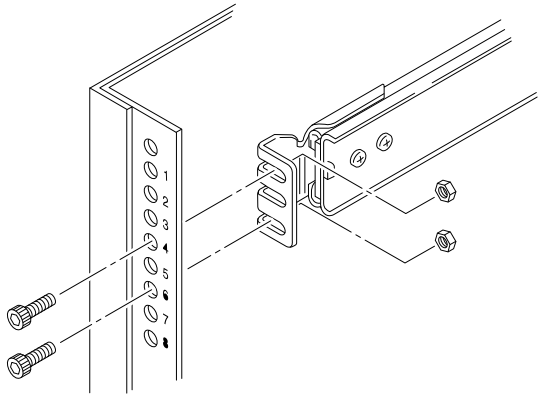


3. Temporarily fit the brackets to both ends of outer rail using the four screws (+B4×12).

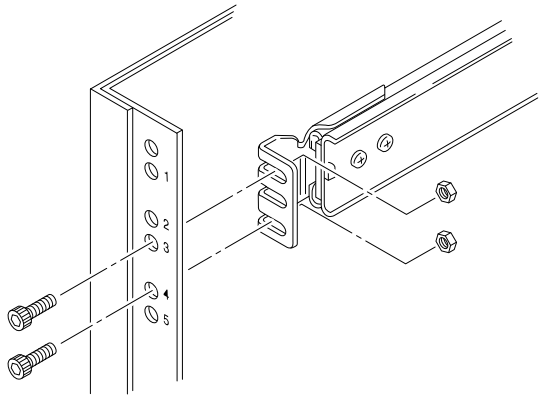


4. Adjust the position of the bracket in line with the rack depth and tighten the screws fixing the bracket.
5. Fit the bracket to the rack using the two hexagonal socket head bolts.

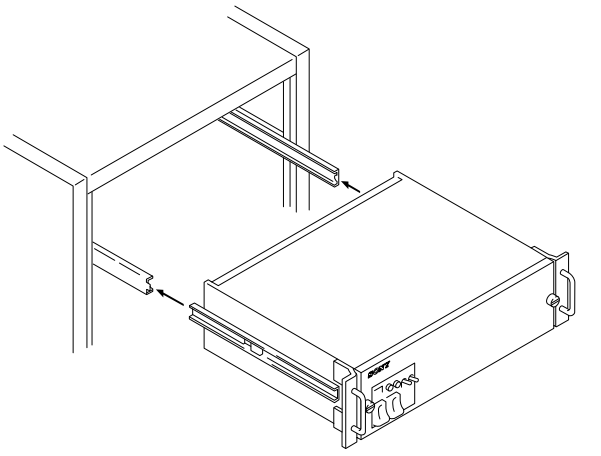
• Universal-type Rack



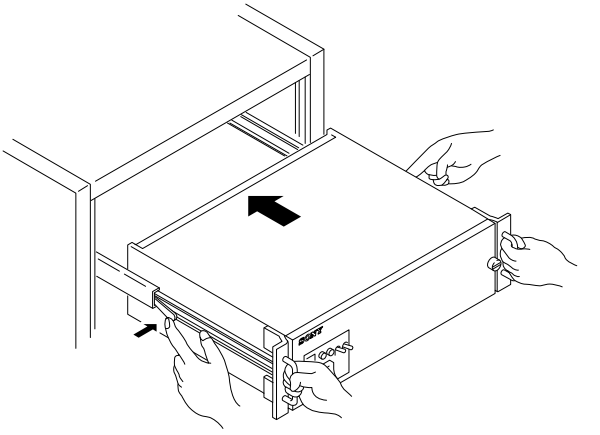
• Wide-type Rack



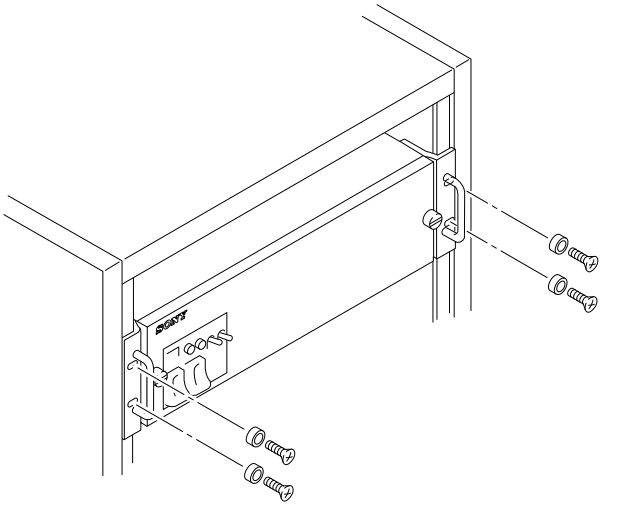
6. Pull out the outer rails.



7. While pressing the stoppers, slide the inner rails fully into the outer rails.
   Have two or more persons to do this work.



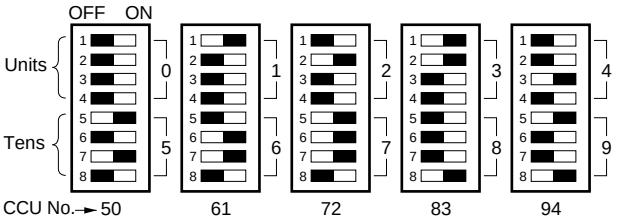
8. Secure the rack angles to the rack with the four screws (M5×10) and the four ornamental washers (ø5).



1-4. Function of Internal Switch

AT-88 board

- S201 (MIC LEVEL 1 0 dBu/-20 dBu)
- S301 (MIC LEVEL 2 0 dBu/-20 dBu)
  Used to set the output level at the MIC OUT CH1/CH2 connector to “0 dBu” or “-20 dBu”.
  Factory-setting is “0 dBu”. (0 dBu=0.775 Vrms)
- S1001 (CCU No.)
  This switch is mainly used for the CCU number setting. The CCU number of 1 to 96 can be set in binary coded decimal (BCD) using the switches 1 to 8 of S1001. The switches 1 to 4 determine the number of units and 5 to 8 determine the number of tens. For each digit, the number of 0 to f can be assigned. The numbers a to f, however, become invalid.
  (Example)



  The switches 1 to 8 of S1001 are factory-set to “OFF” (00).

- S1002-1
  Not used. Always set to “OFF”.
- S1002-2
  When no reference signal is input to CCU, alarm indicator is lit or alarm message is displayed on MSU, RCP or CNU normally. This switch selects whether the alarm indication is performed with no reference signal input, or not.
  With the switch set to ON, the alarm indication is not performed.
  Factory-setting is “OFF”.
- S1002-3
  Not used. Always set to “OFF”.
- S1002-4
  This switch selects the way to control the PIX 1/2 and WF 1/2 connectors.
  ON : MSU or RCP controls PIX 1 and PIX 2, WF 1 and WF 2 simultaneously.
  OFF : RCP controls PIX1 and WF 1, MSU controls PIX 2 and WF 2.
  It is recommended to turn on when either MSU or RCP is connected to CCU.
  Factory-setting is “OFF”.
- S1002-5 (CHARACTER OFF SELECT)
  When the CHARACTER button on the RCP control panel is turned off (the lamp goes out), S1002-5 selects whether an error message is displayed in the auto setup and diagnosis modes, or not.
  OFF : Normal mode
  (A message is displayed only when an error occurs.)
  ON : No message is displayed
  Factory-setting is “OFF”.
- S1002-6 (CB CHARACTER SELECT)
  This switch selects a character signal to be added to the color bars signal output from the CCU.
  ON : Standard character signal (SONY logotype)
  OFF : Special character signal set by a user
  (Displayed with S1002-7 set to “ON”.)
  Factory-setting is “OFF”.
- S1002-7 (SPECIAL CHARACTER ON/OFF)
  When this switch is set to “ON”, a special character signal, set by a user, is added to the color bars signal to be output from the CCU. To output the signal, press the BARS button on the MSU control panel and turn on the CB CHARA button in the MSU touch panel.
  Factory-setting is “OFF”.
- S1002-8 (CONTROL CLEAR)
  When this switch is set to “ON”, all analog control data is returned to the center value and switch data is returned to its factory-set value every time the power of CCU is turned off.

Note

- This switch setting is valid only when the CCU number set with S1001 is 96 or less.
- When the switches 1 to 8 of S1001 are all set to “ON” with S1002-8 set to “ON”, the data of hour meter stored in the microcomputer on the AT board is reset.
- When the switches 2 to 8 of S1001 are set to “ON” with S1002-8 set to “ON”, the special character signal, set by a user is deleted.

Factory-setting is “OFF”.

- S1003 (CHU MIC 1 AMP GAIN)
- S1004 (CHU MIC 2 AMP GAIN)

  These switches are used to select the AMP GAIN at the MIC IN CH1/CH2 connectors of the camera head according to the sensitivity of microphone or the audio condition at the time of shooting. 60 dBu (“NORM” position), 50 dBu, 40 dBu, 30 dBu and 20 dBu (“MIN” position) can be selected.

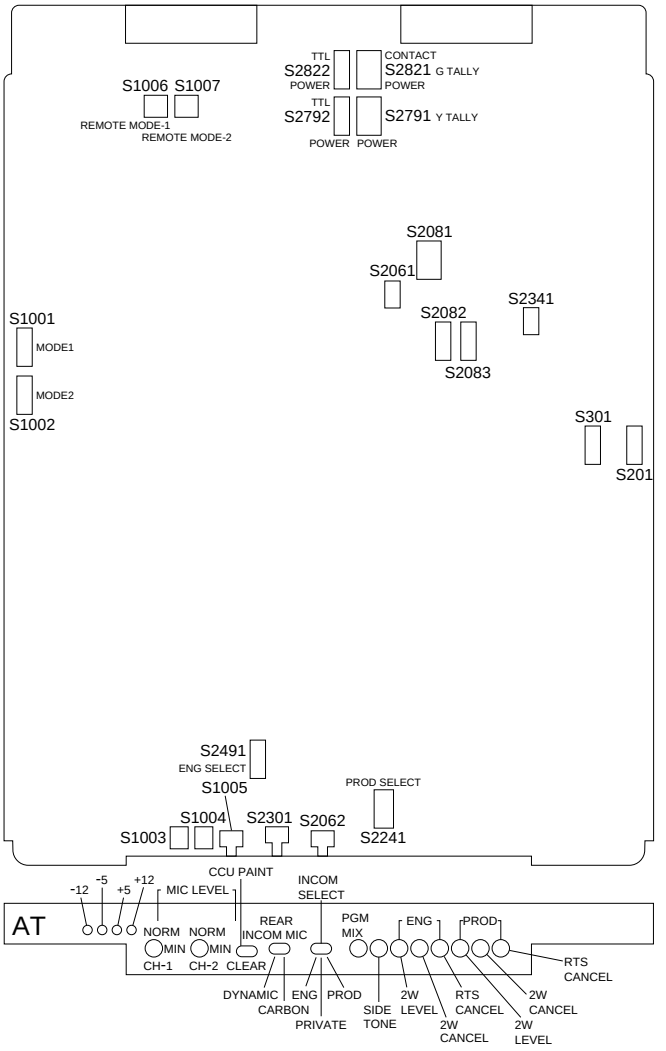
  Factory-setting is “NORM” (60 dBu).

  (0 dBu=0.775 Vrms)
- S1005 (CCU PAINT CLEAR)

  When this switch is set to “CLEAR”, variable control items in the CCU are all fixed to the center value.

  Factory-setting:

  (AT board front panel)



- S1006 (CMD/ISR)
- S1007 (CMD/ISR)

  Used to select modes for the REMOTE (AUX) connector on the rear panel.

  CMD : Camera control mode

  ISR[*1] : Self-diagnosis mode when the CCU malfunctions. Using this mode, connect a personal computer to the CCU.

  Be sure to set S1006 and S1007 to the same mode.

  Factory-setting is “CMD”.

*1: ISR=Interactive Status Report system

- S2061 (INPUT SELECT 1CH/2CH)

  Set this switch according to the intercom system in use to “1CH” (PROD) or “2CH” (PROD, ENG). When set to “1CH”, the PROD (producer) line is automatically selected regardless of the settings of the camera intercom line selector (rear panel) and S2062 (ENG/PRIVATE/PROD) switch on the AT-88 board of the CCU. Set S2341 (INCOM MIX) to OFF with S2061 set to “1CH”.

  Factory-setting is “2CH”.
- S2062 (PROD/PRIVATE/ENG)

  This switch selects the intercom signals which are input/output at the INTERCOM connector on the front panel or the INTERCOM connector on the rear panel (optional connector).

  PROD : For communication via the producer line

  PRIVATE : For off-line communication between the CCU and camera head.

  ENG : For communication via the engineer line

  When the switch S2341 (INCOM MIX) is set to ON, the intercom signal is connected to both the producer and engineer lines, so only the off-line communication (“PRIVATE” position) is enabled.

  Factory-setting is “PROD”.
- S2341 (INCOM MIX ON/OFF)

  This switch selects the intercom signals which are input/output at the INTERCOM connector on the front panel or the INTERCOM connector on the rear panel (optional connector).

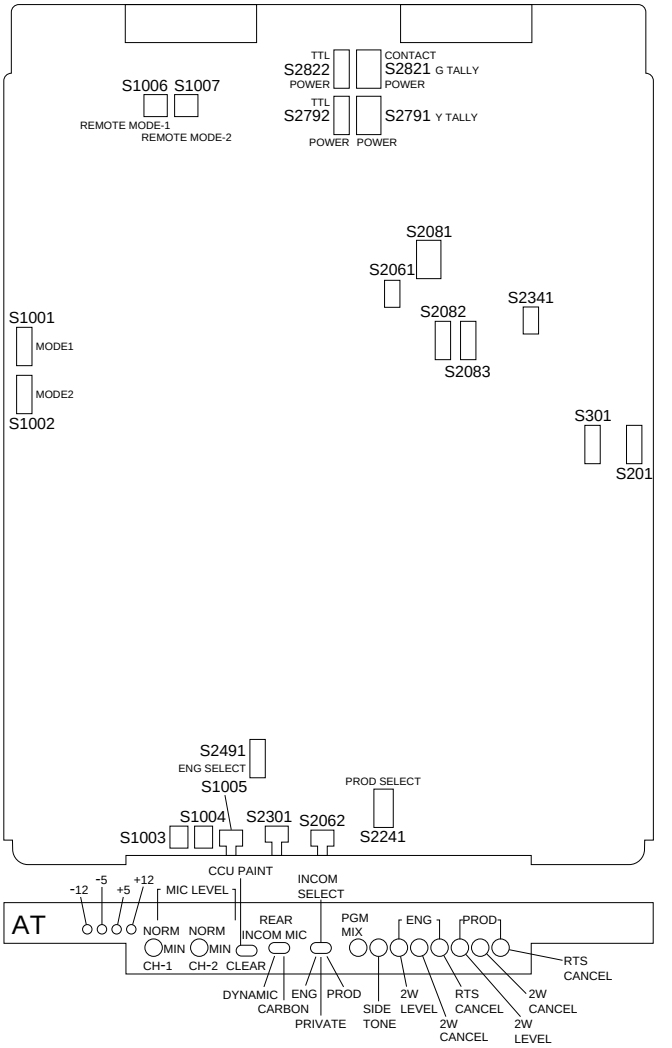
  ON : For communication via both the engineer and producer lines.

  OFF : For communication via the intercom line selected by S2062 (PROD/PRIVATE/ENG).

  When the switch S2062 is set “PRIVATE”, the setting of S2341 becomes invalid and only the off-line communication between the CCU and camera head is enabled.

- S2081 (PGM IN 0 dBu/-20 dBu)
  Used to set the PGM (program audio) level at the INTERCOM/TALLY/PGM connector or the rear panel to “0 dBu” or “-20 dBu”.
  Factory-setting is “0 dBu”. (0 dBu=0.775 Vrms)
- S2082 (PGM MIX ON/OFF)
  When this switch is set to “ON”, the PGM (program audio) signal is added to the intercom 1/2 lines of the camera head.
  Factory-setting is “OFF”.
- S2241 (INCOM PROD SELECT 2 W/RTS/4 W)
  This switch selects the intercom system of the producer line.
  2W : 2-wire system
  RTS : RTS system
  4W : 4-wire system
  Factory-setting is “4W”.
- S2491 (INCOM ENG SELECT 2 W/RTS/4 W)
  This switch selects the intercom system of the engineer line.
  2W : 2-wire system
  RTS : RTS system
  4W : 4-wire system
  Factory-setting is “4W”.
- S2301 (INCOM MIC CARBON/DYNAMIC)
  Set this switch to “CARBON” or “DYNAMIC” according to the input impedance for the headset microphone connected to the INTERCOM connector on the rear panel (optional).
  Factory-setting is “CARBON”.
- S2791 (R TALLY POWER/CONTACT)
- S2792 (R TALLY POWER/TTL)
  Set these switches according to the specification of the R signal which is input at the INTERCOM/TALLY/PGM connector on the rear panel.
  The relationship between the signal and switch setting is shown in the table.
- S2821 (G TALLY POWER/CONTACT)
- S2822 (G TALLY POWER/TTL)
  Set these switches according to the specification of the G signal which is input at the INTERCOM/TALLY/PGM connector on the rear panel.
  The relationship between the signal and switch setting is shown in the table.
  Factory setting is “POWER”.

	Signal		
Switch	**Contact**	**Power(+24 V)**	**TTL**
S2791,S2821 (Power/Contact)	Contact	Power	Power
S2792,S2822 (Power/TTL)	Do not care	Power	TTL



DM-94 board

- S1 (AUTO/MANU)
  When this switch is set to “AUTO”, a triaxial cable length between the CCU and camera head is detected on automatic. When set to “MANU” (MANUAL), the cable length can be set on manual using the switch S2 (CABLE LENGTH SELECT).
  Factory-setting is “AUTO”.
- S2 (CABLE LENGTH SELECT)
  This switch is valid with the switch S1 (AUTO/MANU) set to “MANU”. Set the switch according to the following table.
  Factory-setting is “0” (100 m).

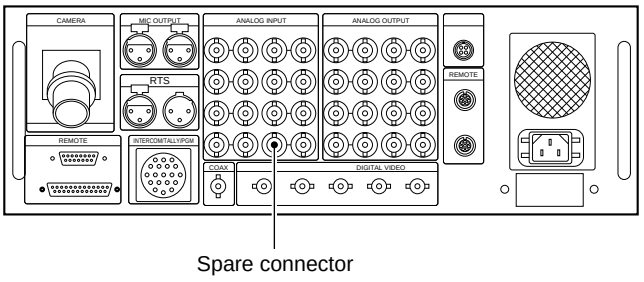
Switch setting	Cable length	Switch setting	Cable length
0	100 m	3	640 m
1	280 m	4	820 m
2	460 m	5	1000 m

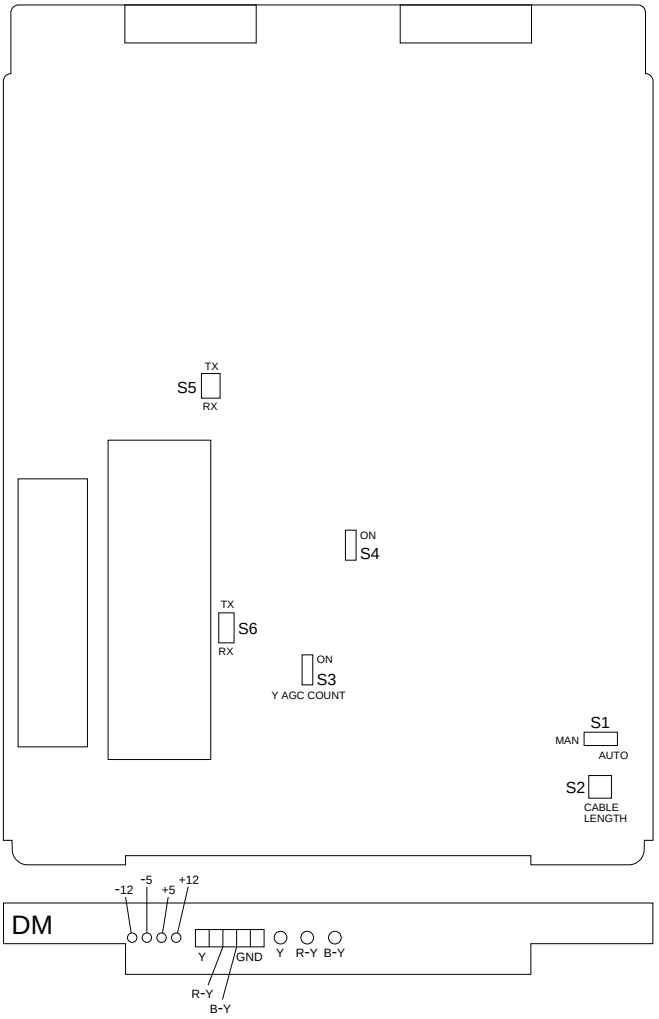
- S3 (Y-ch 2nd AGC ON/OFF)
- S4 (CHROMA-ch 2nd AGC ON/OFF)
  Used for the RF AGC adjustment. Normally set to “ON”.
- S5 (PROMPTER POWER SELECT TX/RX)
  When this switch is set to “TX”, a power is supplied to the modulation circuit sending a prompter signal. When set to “RX”, power is supplied to the demodulation circuit receiving a prompter signal from the camera head. Be sure to set this switch and S6 (PROMPTER RF SELECT) switch to the same mode.
  Factory-setting is “TX”.
- S6 (PROMPTER RF SELECT TX/RX)
  When this switch is set to “TX”, a circuit sending an RF signal activates, and when set to “RX”, a circuit receiving an RF signal activates. Be sure to set this switch and S5 (PROMPTER POWER SELECT) to the same mode.
  Factory-setting is “TX”.

Note

When the switches S5 and S6 are set to “RX”, a prompter signal from the camera head is output to spare connector as shown below.

(Rear panel)





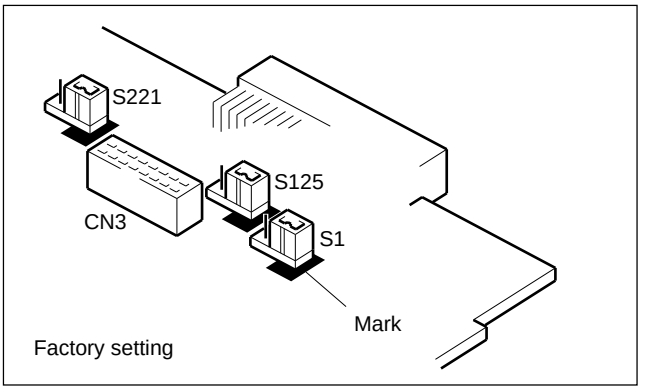
VA-156A/156P board

- S1 (Y SEL)
- S125 (R-Y SEL)
- S221 (B-Y SEL)

  When the external signals (Y, R-Y, B-Y) are supplied to CN3 on the VA board, set S1, S125 or S221 to unmarked position respectively.

  For normal operation, keep the factory-setting position.

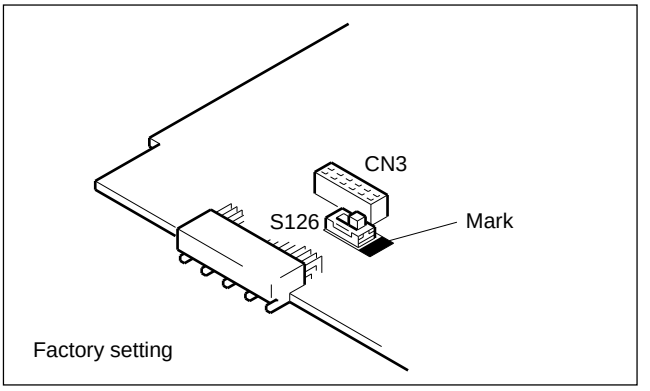
  These are factory-set to marked position as illustrated.



- S126 (TEST ON/OFF)

  Use this switch to check the VA board adjustment. When this switch and the BARS button on the MSU control panel are both turned on, an internal color-bar signal can be supplied to the input stage of VA board. Using this signal, each circuit operation check is enabled.

  Factory-setting is “OFF” (marked position).

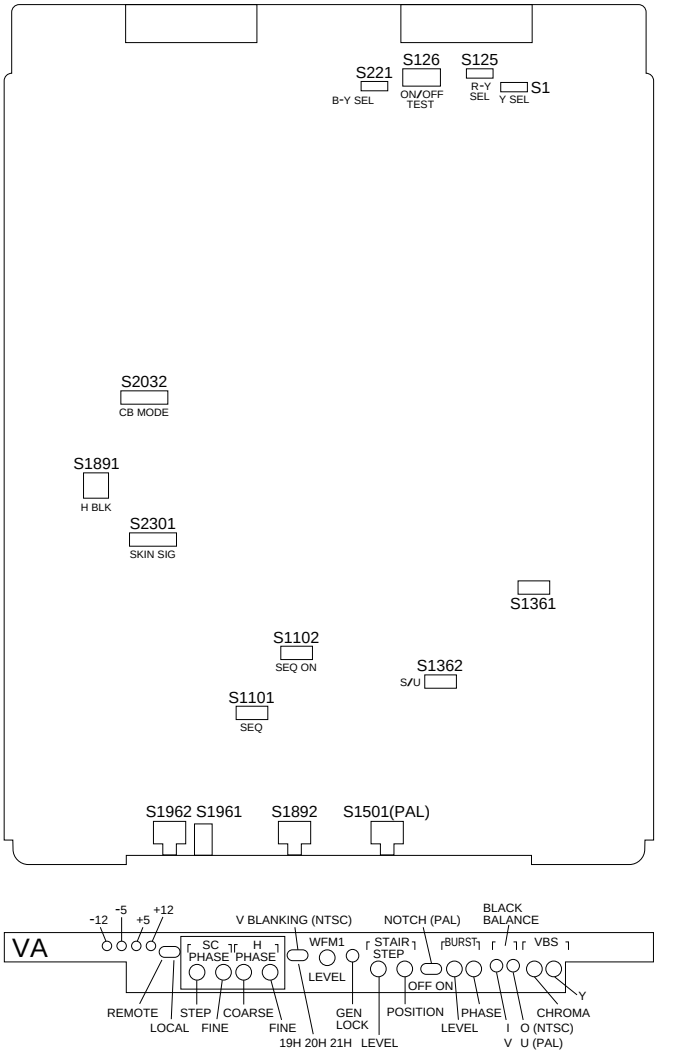


- S1101 (SEQ4/SEQ3)

  This switch selects the SEQ mode for a waveform monitor. This is for an optional circuit. When set to “3” (SEQ3), three waveforms of R, G and B are sequentially output. When set to “4” (SEQ4), four waveforms of R, G, B and Y are.

  Factory-setting is “3” (SEQ3).

  If you use the SEQ4 mode, please consult your service representative.



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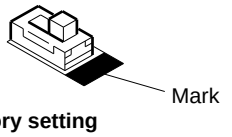
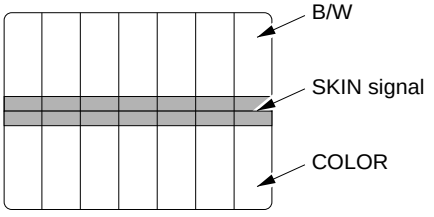
- S1102 (SEQ +/-)
  Select “+” or “-” according to a waveform monitor in use.
  + : NPN open collector output
  - : PNP open collector output
  Factory-setting is “-”.
- S1361 (I ON/OFF)... for CCU-700A
- S1361 (U ON/OFF)... for CCU-700AP
  This switch is used for the encoder circuit adjustment. When the switch is set to “OFF”, the I/U signal is not added to the chroma circuit. Therefore, the composite video signal (VB or VBS) output from the CCU does not contain the I/U signal.
  Normally set to “ON” (marked position).
- S1362 (Q ON/OFF)... for CCU-700A
- S1362 (V ON/OFF)... for CCU-700AP
  This switch is used for the encoder circuit adjustment. When the switch is set to “OFF”, the Q/V signal is not added to the chroma circuit. Therefore, the composite video signal (VB or VBS) output from the CCU does not contain the Q/V signal.
  Normally set to “ON” (marked position).



S1361, S1362 Factory setting

- S1501 (NOTCH ON/OFF)…CCU-700AP only
  A cross color of the VBS output will be reduced by turning on the notch filter circuit. To adjust the notch filter circuit, use controls on the VA board or the MSU-700 touch panel. And to turn on or off the circuit use the switch S1501 or the MSU-700 touch panel. “ON” operation has a priority.
  Normally set this switch to “OFF”.
- S1891 (H BLKG)
  Used to adjust the H blanking width. The pulse width is factory-set to 10.9 ± 0.2 µs for CCU-700A and to 12.0 ± 0.2 µs for CCU-700AP.
  Set according to use.
- S1892 (V BLKG)... CCU-700A only
  Used to set the V blanking width to 19H, 20H or 21H.
  Factory-setting is “20H”. Set according to use.
- S1961 (SC STEP)
  Used to adjust the subcarrier phase. One step of this switch changes 90 degrees. This switch activates only when the switch S1962 is “LOCAL”.
- S1962 (REMOTE/LOCAL)
  This switch selects whether the master setup unit MSU performs the following adjustments or the CCU-700A does.
  - H and SC phases synchronization with an external genlock signal
  - NOTCH level and width adjustments (CCU-700AP only)

  REMOTE : The master control unit does.
  LOCAL : CCU-700A does using the switch and controls on the VA-156A/156P board.
  S1961(SC STEP)…for SC PHASE adjustment
  RV1961(SC FINE)
  RV1962(H PHASE)…for H PHASE adjustment
  RV1963(H FINE)
  RV1501(NOTCH LEVEL)…for NOTCH adjustment
  RV1502(NOTCH WIDTH) (CCU-700AP only)
  When using a remote control unit of RCP-700 series not having the above control functions together with the CCU, be sure to set S1962 to “LOCAL”.
  Factory-setting is “REMOTE”.
- S2031 (SKIN SIGNAL ON/OFF)
  When this switch is set to “ON”, the I axis signal (skin signal) is mixed with the color-bar signal output from the CCU. This skin signal can be monitored by turning on the CB 3 button in the MSU touch panel. When the switch S2031 is set to “OFF”, the skin signal can not be monitored even if turning on the CB 3 button of the MSU.
  Factory-setting is “ON”.

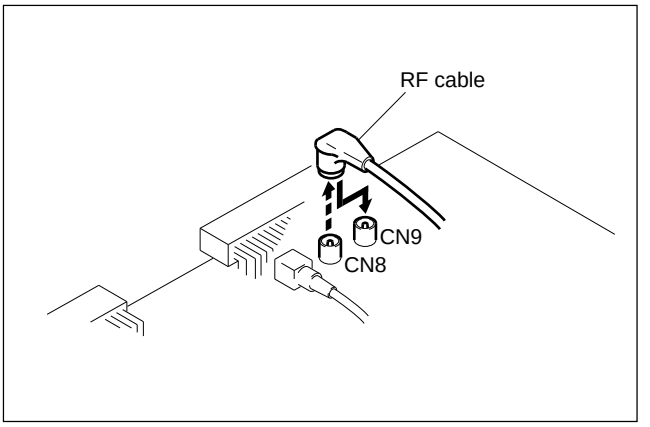


at color-bar signal output (CB GATE ON)

- S2032 (CB SELECT)
  This switch selects a color-bar signal the CCU outputs. The following signals can be output.
  CCU-700A : SMPTE, EIAJ, FULL
  CCU-700AP : EBU, 95 % CB
  Factory-setting is “SMPTE” for CCU-700A and is “EBU” for CCU-700AP.

1-5. Coax Connector

The COAX connector (BNC type) can be used for connection between the CCU and camera head with a BNC cable instead of a triaxial cable. In this case, use a camera equipped with the standalone unit (available separately) because a power is not supplied to the camera. And a TRIAX-to-BNC conversion connector is necessary for the camera.
For the CCU, the following modification is required. Disconnect the RF cable from CN8 on the DM-94 board and reconnect it to CN9.



1-6. Peripheral Equipments and Accessories

- Color Video Camera
  BVP-500/500P (Studio)
  BVP-700/700P (Studio)
  BVP-550/550P (Portable)
  BVP-750/750P (Portable)

- Camera Command Network Unit
  CNU-700

- Master Setup Unit
  MSU-700

- Video Selector
  VCS-700

- Remote Control Panel
  RCP-700/701
  RCP-720/721
  RCP-740/741

- CCA-5 Cable
  CCA-5-3 (3 m)
  CCA-5-10 (10 m)

- Triaxial Cable
  Connection cable between BVP and CCU

- Long Triax Unit
  BKP-7310

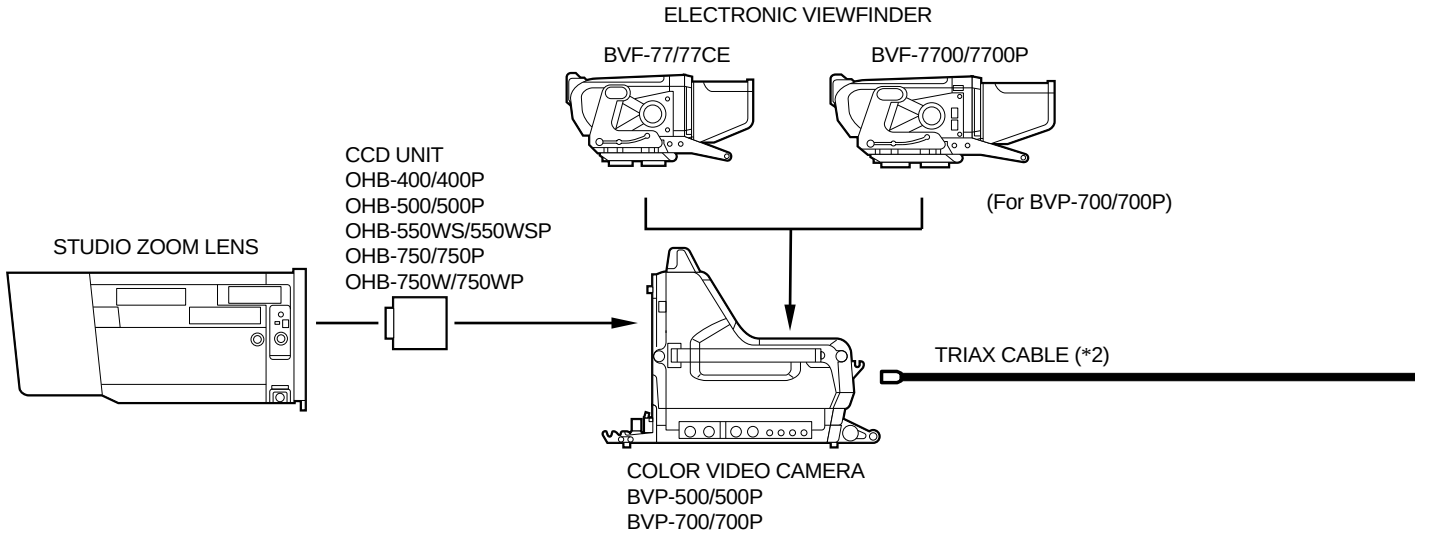
- SDI Output Board
  BKP-7311

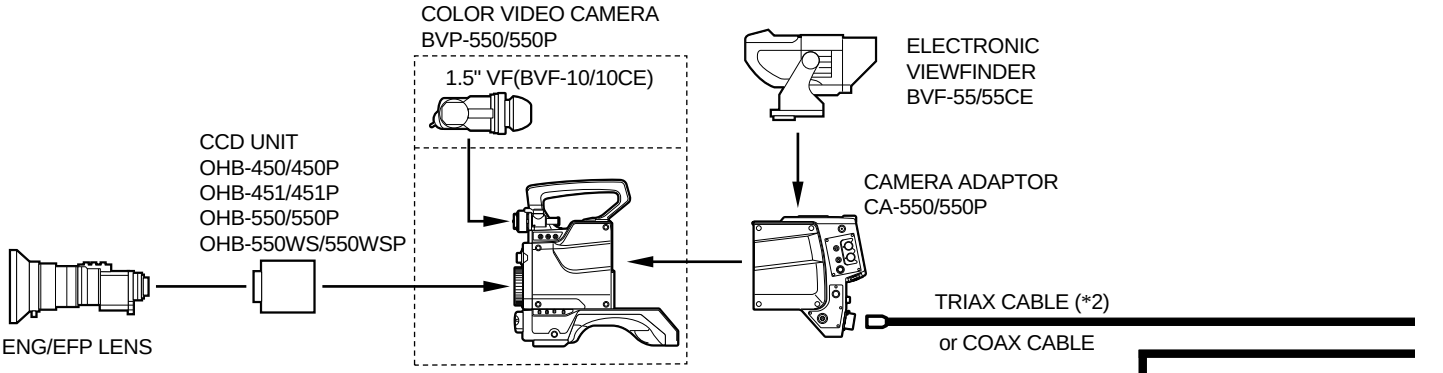
- SDI Input Board
  BKP-7312

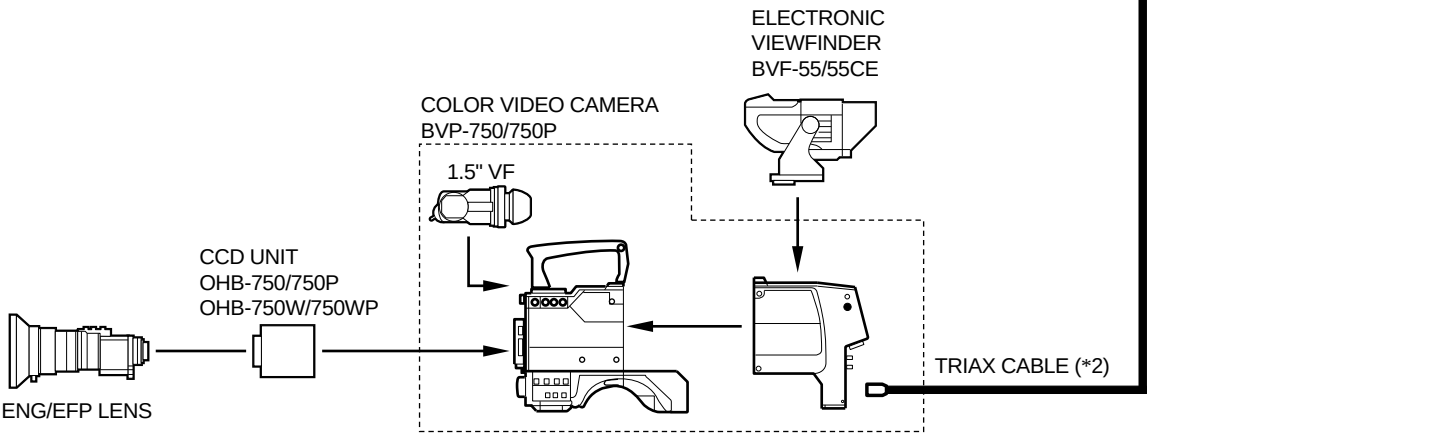
- Sub Encode Unit
  BKP-7931/7931P

- Extension Board (For CCU-700A/CNU-700)
  BKP-7900

1-7. Instance of System Configuration

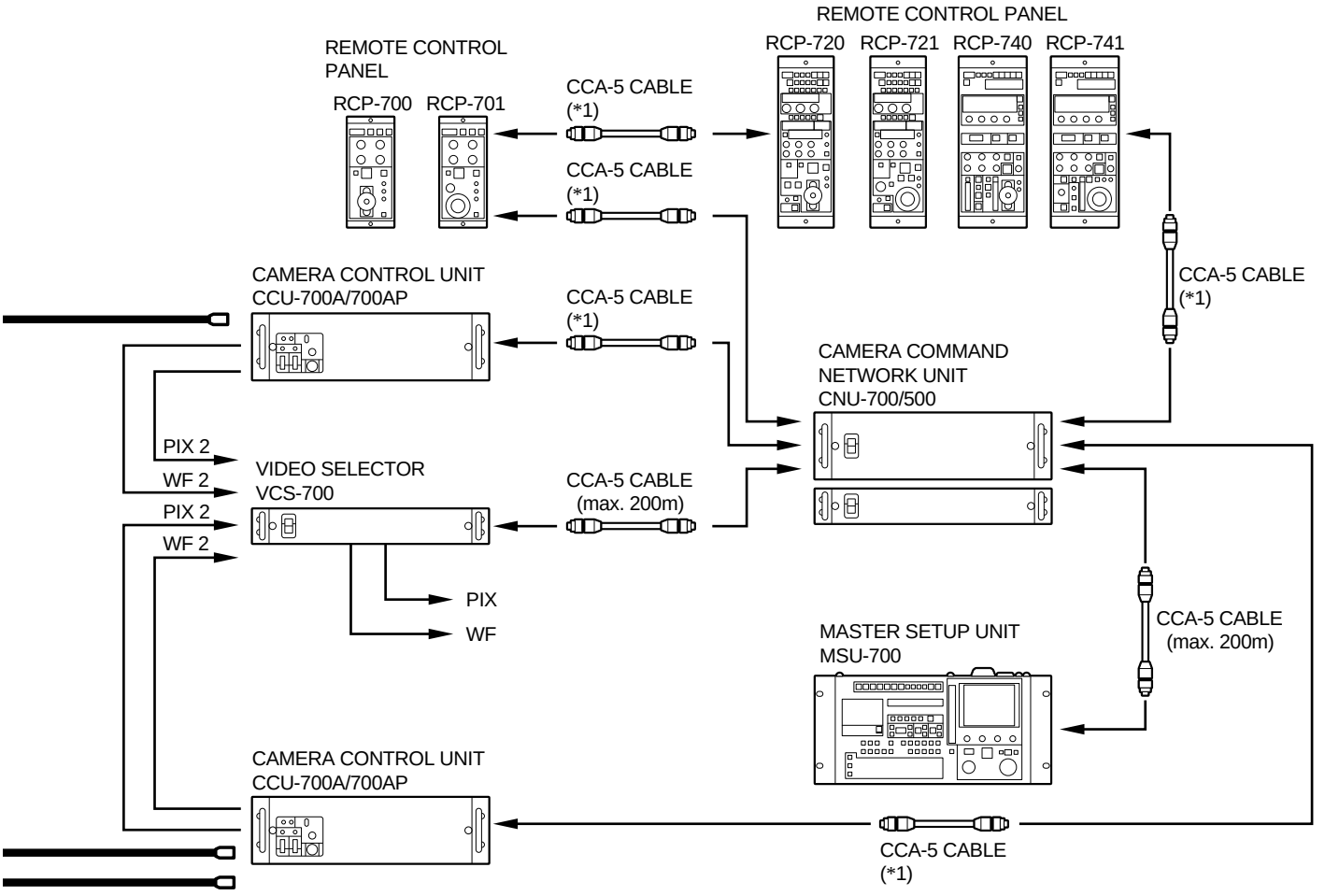




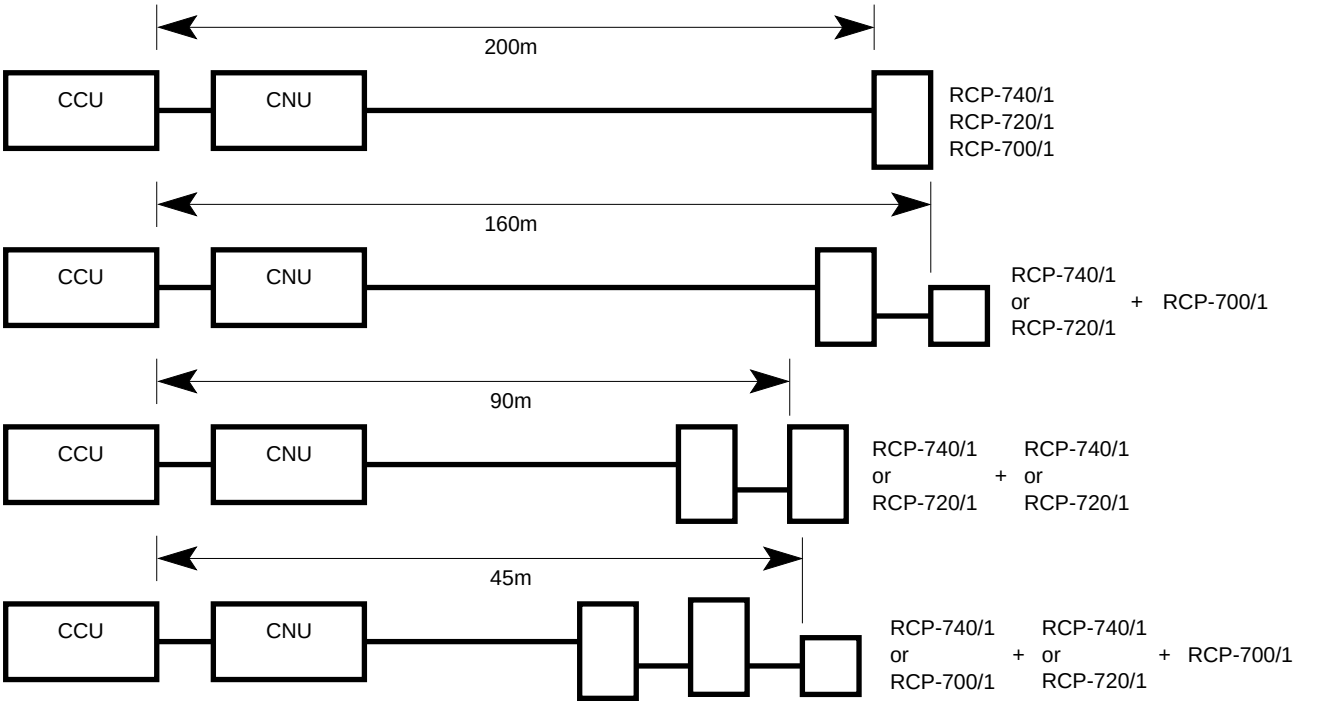


*2: TRIAX CABLE LENGTH

Diameter	Maximun length
8.5 mm	1000 mm
14.5 mm	2000 mm



*1: CCA-5 CABLE LENGTH



Section 2
Service Overview

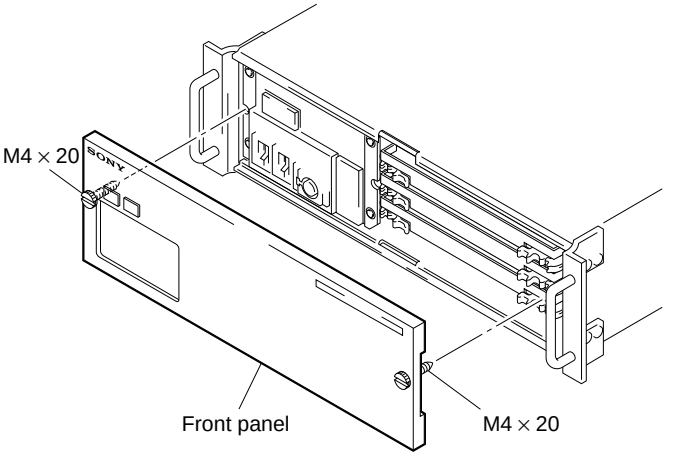
2-1. Replacement of Main Parts

2-1-1. Removal of Front Panel

1. Loosen the two screws to remove the front panel.

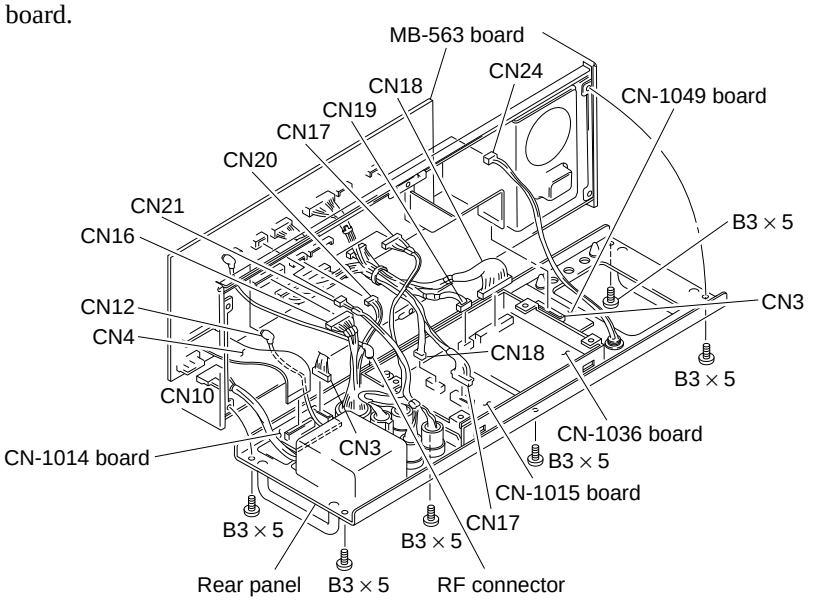
Note

Stoppers are provided for these screws.



2-1-2. Removal of Rear Panel

1. Removal the six screws (+B3×5) and open the rear panel.
2. Disconnect the eight connectors from the rear panel; CN3,4/CN-1014 board, CN17,18/CN-1015 board, CN18,19/CN-1036 board, CN3/CN-1049 board and RF connector.
3. Disconnect the seven connectors (CN10, 12, 16,17, 20, 21, 24) from the MB-563 board.

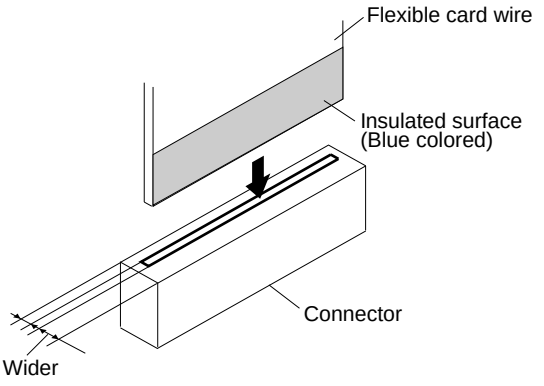


2-1-3. Disconnecting/Connecting of Flexible Card Wire

The two flexible card wires are used between the MB-563 board and CN-1014 board, CN-1049 board.
Be careful not to bend these wires. This shortens the wire life.

Disconnecting

1. Turn off the power of the camera.
2. Pull out the flexible card wire from the connector.



Connecting

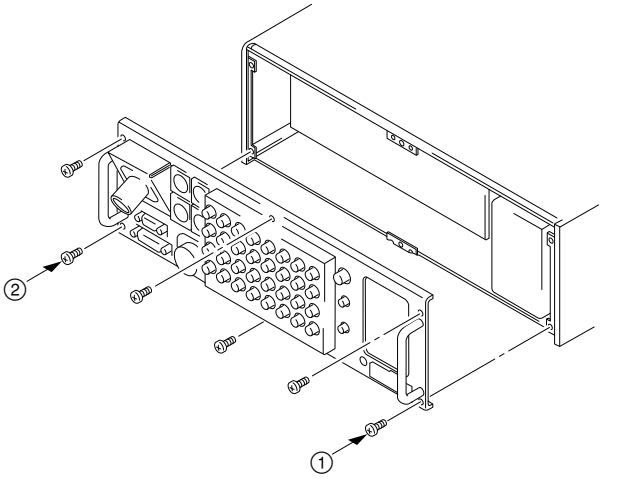
Note

- Be careful not to insert the flexible card wire obliquely.
- Check that the conductive surface of the flexible card wire is not soiled with dust.

1. Insert the flexible cable tightly into the connector so that the insulated surface (blue colored) of the cable is faced to the wider width of the connector flange.

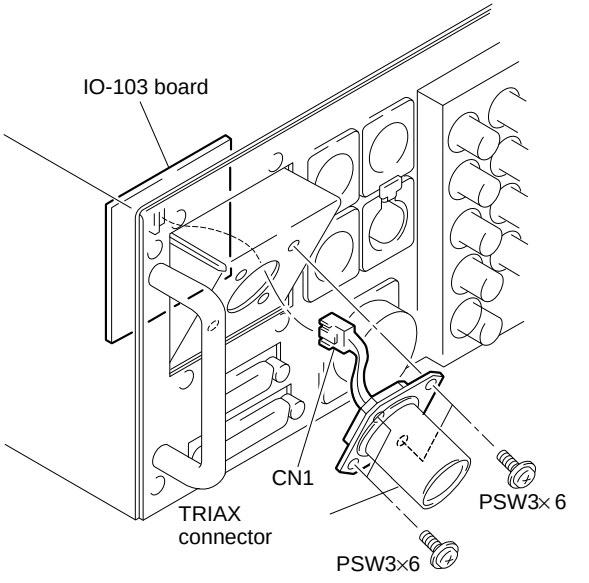
2-1-4. Installation of Rear Panel

1. Tighten the two screws ① and ② in numeral order, then tighten the other four screws randomly.



2-1-5. Replacement of TRIAX Connector

1. Remove the four screws .
   Disconnect the connector CN1 on the IO-103 board and remove the TRIAX connector.



(Illustration: UC model)

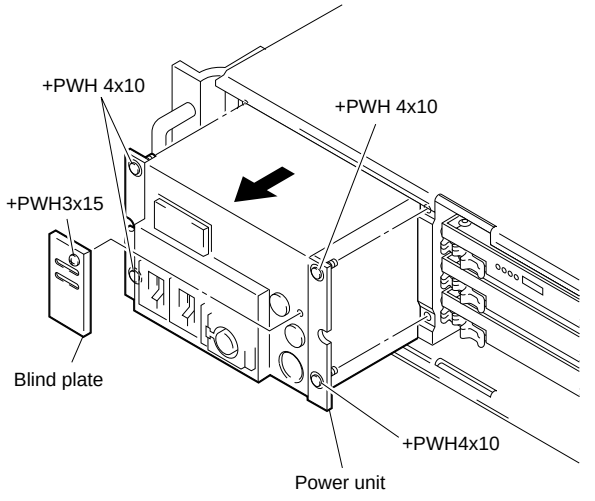
2. Install a new TRIAX connector in the reverse procedures for removal.

2-1-6. Replacement of Power Unit

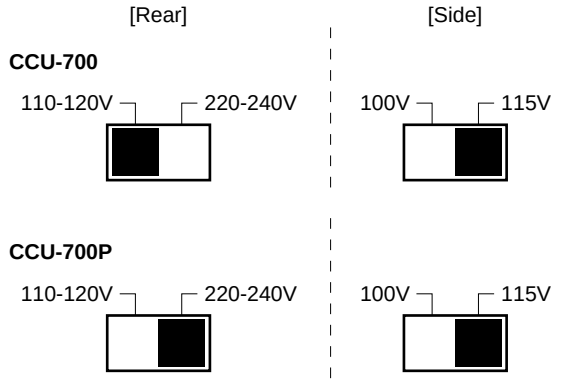
1. Disconnect the power cord from the CCU-700A/ 700AP rear panel. Remove the front panel.
2. Loosen the screw (+PWH3×15) and remove the blind plate. Loosen the four screws (+PWH4×10) fixing the power unit while pushing the power unit forward at the fan in the rear of the unit.

   Note

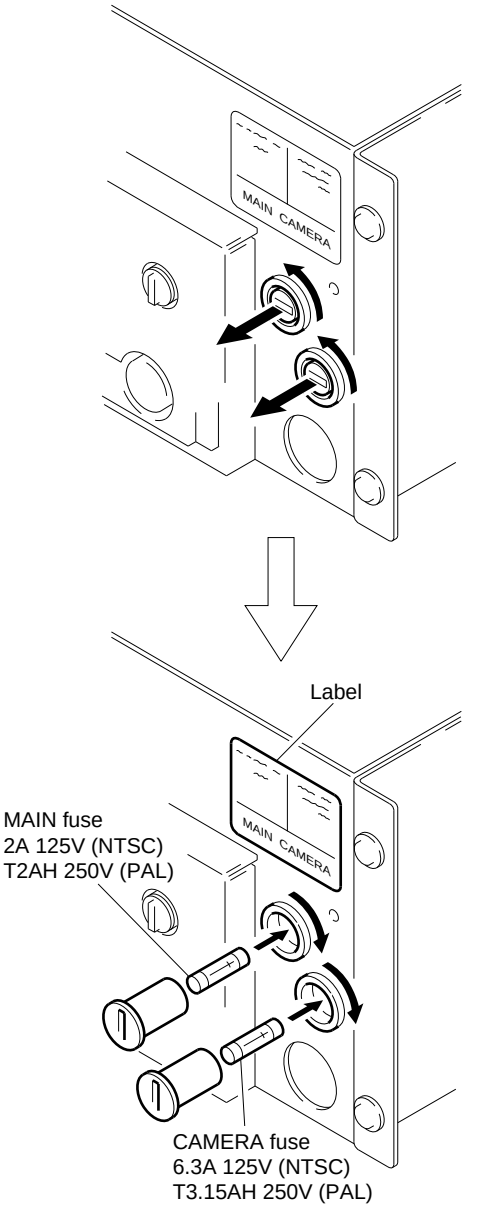
   - Support this unit by both hands in extracting because it is so heavy.
   - The four screws fixing the power unit cannot be removed from the power unit, because stoppers are provided for them.



3. Set the two voltage selectors on the rear and side panels, of a replacement power unit as illustrated.



4. Remove the blind plate of the replacement power unit, then remove and discard the two fuses in the unit. Put the supplied fuses into each fuse holder as the label indicates.



5. After the fuses are replaced, install the power unit and tighten the four screws (+PWH4×10). Return the blind plate.
6. After the replacement is complete, connect to the power cord and turn on the power of CCU and check that the power supplies are correct.

2-1-7. DC Fan Motor Replacement

The unit has DC fan motor in the power unit.
When replacing the DC fan motor, the following procedure is described as shown below.

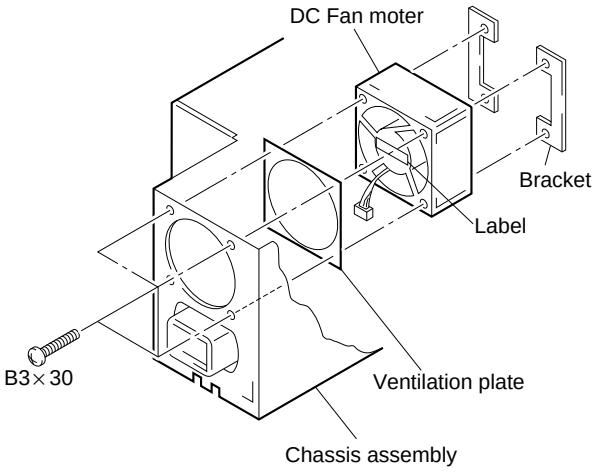
Recommended replacement hours(h)	Name
100,000 H (Total hours when the power of the unit is on.)	DC Fan Motor

How to remove DC fan motor

CAUTION

When replacing the DC fan motor, be sure to turn the power off, and then power cord is disconnected.

1. Disconnect the harness of DC fan motor from J6 on the CN-1013 board.
2. Remove the four screws, then remove the ventilation plate, DC fan motor and bracket from the chassis assembly.



How to install DC fan motor

Note

In replacing, install the DC fan motor with the label faced forward. Improper installation causes the trouble of overheating inside the unit.

1. Attach the ventilation plate, DC fan motor and bracket with four screws to the chassis assembly.
2. After the power unit is installed, connects the harness of the DC fan motor to J6 connector on the CN-1013 board.
3. Connects the power cord, and turn the power on, make sure that the air flows from inside to outside of the unit.

2-2. Note on Servicing

2-2-1. Precaution of Replacement Parts

1. Safety Related Components Warning

Components marked ⚠ are critical to safe operation. Therefore, specified parts should be used in the case of replacement.

2. Standardization of Parts

Some repair parts supplied by Sony differ from those used for the unit. These are because of parts commonality and improvement.
Parts list has the present standardized repair parts.

3. Stock of Parts

Parts marked with “o” at SP(Supply Code) column of the spare parts list may be not stocked. Therefore, the delivery date will be delayed.

4. Units Representation

The following represented units are changed or omitted in writing.

Units		Representation
Capacitance	μF	uF
Inductance	μH	uH
Resistance	Ω	Abbreviation
Temperature	°C	XXX-DEG-C

5. Destination Representation

The part indicated “For J/UC/CE” in the spare parts list is used in the unit written below.

For J : The part is used in a unit for Japan.
For UC : The part is used in a unit for U.S.A. and Canada.
For CE : The part is used in a unit for regions except the above countries.

2-2-2. PROM IC

Each PROM IC on the PC board has a suffix to its original designation. This suffix may change according to improvement of IC. Never use an IC having no suffix to its original designation, because its memory has not been programmed. Each PROM IC is mounted on the PC board via socket.

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Section 3
Electrical Alignment

3-1. Preparation

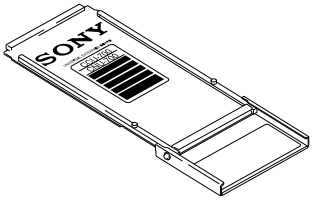
3-1-1. Equipment Required

- Oscilloscope (more than 300MHz)
  Tektronix 2465 or equivalent
- Waveform monitor Tektronix 1485R or equivalent
- Color monitor Sony PVM-1311/1320 or equivalent
- Vectorscope
- Video signal generator
  Tektronix 1410/1411 or equivalent
- Video signal generator
  Shibasoku TG-7 or equivalent
- Video camera Sony BVP-700/700P
- Master Setup Unit Sony MSU-700
- Remote control Unit Sony RCP-740 series
- Digital voltmeter
- Frequency counter
- Audio generator
- Spectrum analyzer
- DC power supply (+2.5 ±0.05 V)

3-1-2. Fixture

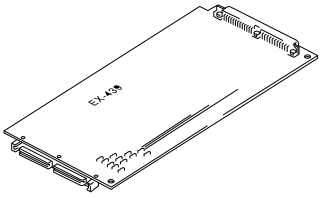
Extension board BKP-7900

Extension for Board of CCU-700A/700AP (Optional)



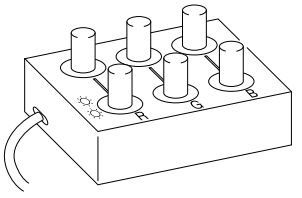
Extension board EX-439

Sony part number : A-8314-124-A
• Supplied accessory (BVP-700/700P)



CCU-370 Checker

Sony part number : J-6390-880-A



3-1-3. Notes on Adjustment

CAUTION

- "3-3-32. NOTCH Adjustment" is valid for PAL model. When carrying out "3-3-32. NOTCH Adjustment" CCU-370 Checker is required.
- When adjusting STAIR CASE adjustment, connect the WF MODE connector of CCU-700A/700AP rear panel and remote control connector of waveform monitor with 3-pin cord. (Regarding the 3-pin cord, refer to Section 1.)
- Adjust the chrominance level at VIDEO OUT so that each beam spot should be positioned inside the color reproducibility frame using ⊘CV1602 and ⊘CV1603 on the VA-156A/156P board.
- Do not turn the following adjusting core on the DM-94 board.
  Replace new filter when the filter is out of order, and the adjustment for new part is not required.

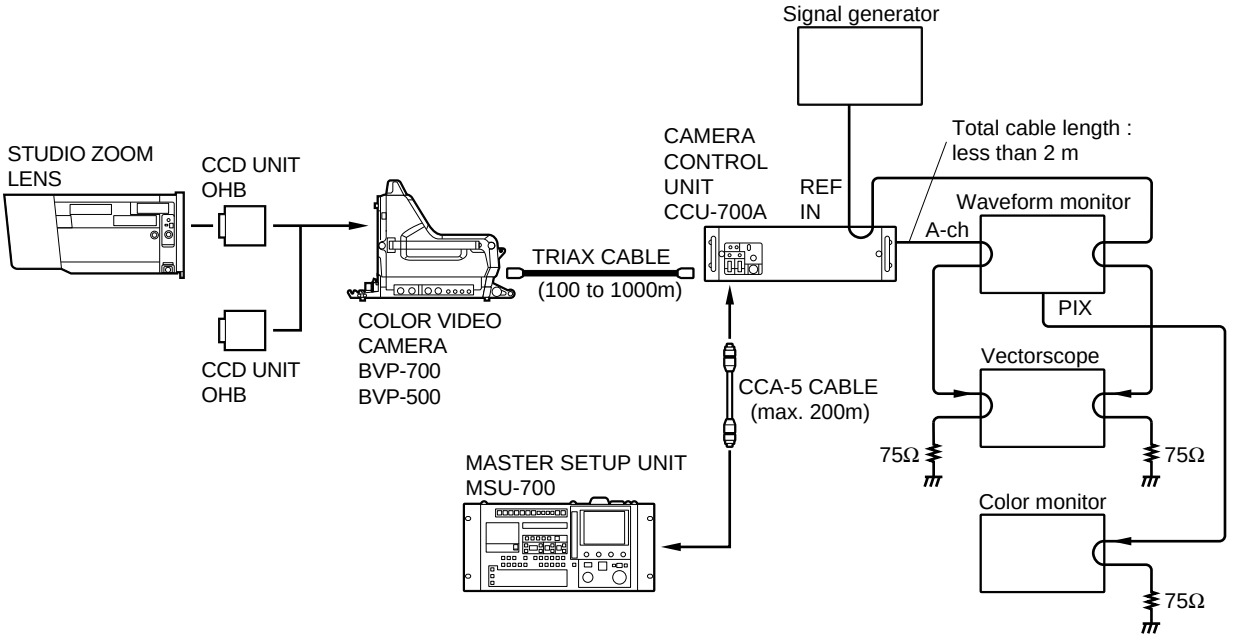
  DM-94 board
  FL1, FL2, FL4, FL5, FL6, FL7, FL8, FL9, FL10, FL11, FL12, FL13, FL14, FL15

- Board names are some different between NTSC model (CCU-700A) and PAL model (CCU-700AP).
  Read the board name in this section as following names.
  VA-156 → VA-156A [For NTSC model]
  VA-156 → VA-156P [For PAL model]

- Every adjustment is ranked from A to C. The ranking is given in the beginning of each adjustment item. The ranking is meaned as follows .
  Requires in installation : A
  Requires in periodical check : A and B
  Rank C is required only in replacement of part.

3-1-4. Connection

Note: Make sure that the adjustment for Video camera must be completed.



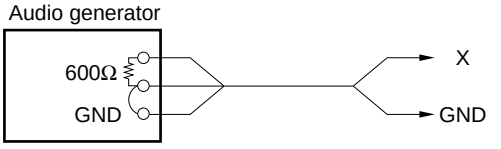


Fig. 1

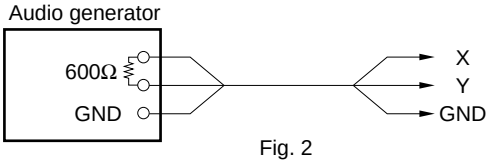


Fig. 2

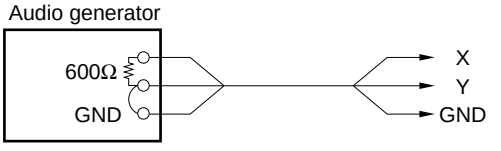


Fig. 3

3-1-5. Initial Setting

1. Initial setting of each switch

CCU-700/700P

[VA-156 board]

S1 (Y SEL CAM/AUX)	Marked side
S125 (R-Y SEL CAM/AUX)	Marked side
S126 (TEST ON/OFF)	"ON" *1
S221 (B-Y SEL CAM/AUX)	Marked side
S1892 (V BLKG); NTSC ONLY	"20H"
S1962 (REMOTE REM/LOCAL)	"LOCAL" *2
S2032 (CB SELECT) [For UC]	"SMPTE" *3
[For EK]	"EBU"*3

[DM-94 board]

S1 (MODE AUTO/MANU)	"AUTO"
S3 (Y 2nd AGC)	"ON"
S4 (C 2nd AGC)	"ON"

[AT-88 board]

S201 (MIC 1 GAIN 0dB/–20dB)	"0dB"
S301 (MIC 2 GAIN 0dB/–20dB)	"0dB"
S1006 (REMOTE MODE 1 CMD/ISR)	"CMD"
S1007 (REMOTE MODE 2 CMD/ISR)	"CMD"
S2061 (INPUT SELECT 1CH/2CH)	"2CH"
S2081 (PGM GAIN 0dB/–20dB)	"0dB"
S2082 (PGM MIX ON/OFF)	"OFF"
S2341 (INCOM MIX ON/OFF)	"ON"

*1: When finishing the adjustment, set S126 (TEST ON/OFF)/VA-156 board to "OFF".
*2: S1962 is set to "REMOTE" at the factory.
*3: When finishing the adjustment, set S2032 (CB SELECT)/VA-156 board to your desired position.

MSU-700

- **POWER AND SIGNAL SWITCH BLOCK**

ALL button	"OFF (lamp goes off)"
CAM PW button	"ON (light up)"
TEST 1 button	"OFF (lamp goes off)"
TEST 2 button	"OFF (lamp goes off)"
BARS button	"OFF (lamp goes off)"
CLOSE button	"ON (light up)"

- **CAMERA HEAD/CCU CIRCUIT ON/OFF BLOCK**

DETAIL OFF button	"OFF (light up)"
KNEE OFF button	"OFF (light up)"
AUTO KNEE button	"OFF (lamp goes off)"
MATRIX OFF button	"OFF (light up)"

- **AUTO SETUP BLOCK**

LEVEL button	"OFF (lamp goes off)"
WHITE button	"OFF (lamp goes off)"
BLACK button	"OFF (lamp goes off)"

- **OTHERS**

GAMMA OFF button	"ON (lamp goes off)"
MASTER GAIN select button	"0"

2. Presetting of compensation signal

- Preset (center value) all compensation signals output from the microcessor before starting the adjustment. If not, the adjustments will not be set correctly even if the specifications are met.

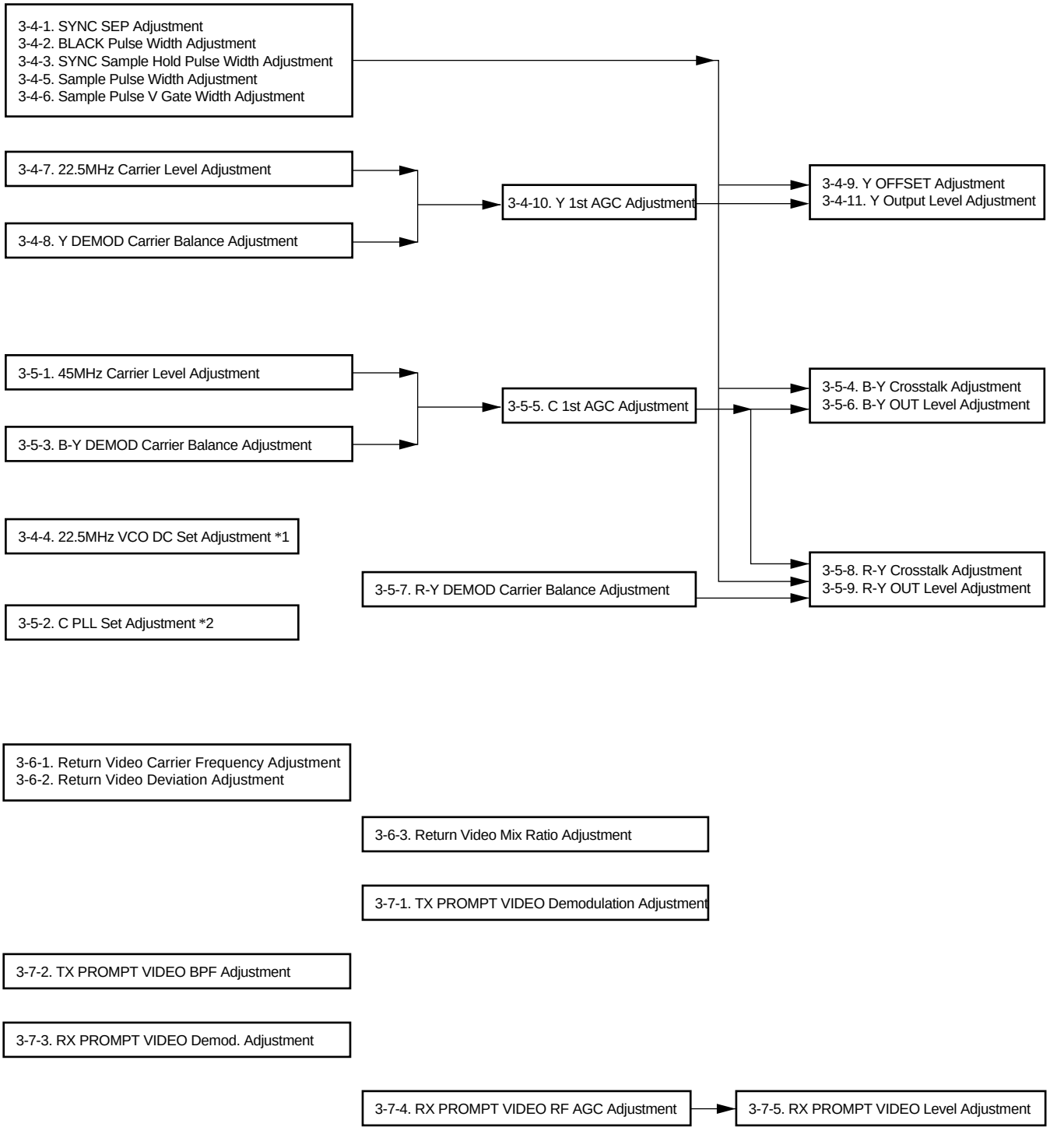
- How to preset the compensation data.
  ① Turn off the power of CCU.
  ② S1002-8 (CONTROL CLEAR)/AT-88 board → "ON"
  ③ Turn on the power of CCU.

  Note

  - This switch setting is valid only when the CCU number set with S1001/AT-88 board is 96 or less.
  - When the switches 1to 8 of S1001/AT-88 board are all set to "ON" with S1002-8 set to "ON", the data of hour meter stored in microprocessor on the AT-88 board is reset.
  - When the switches 2 to 8 of S1001 are set to "ON" with S1002-8 set to "ON", the special character signal, set by a customer, is deleted.
  - When finishing the overall adjustment, set S1002-8 (CONTROL CLEAR) /AT-88 board to "OFF".

3-2. Adjustment Items

If a certain adjustment is required, be sure to perform all of adjustments inside the frame enclosing that adjustment. Then, perform all inside frames indicated by the arrows.


3-4-1. SYNC SEP Adjustment
3-4-2. BLACK Pulse Width Adjustment
3-4-3. SYNC Sample Hold Pulse Width Adjustment
3-4-5. Sample Pulse Width Adjustment
3-4-6. Sample Pulse V Gate Width Adjustment
3-4-7. 22.5MHz Carrier Level Adjustment
3-4-8. Y DEMOD Carrier Balance Adjustment
3-4-10. Y 1st AGC Adjustment
3-4-9. Y OFFSET Adjustment
3-4-11. Y Output Level Adjustment
3-5-1. 45MHz Carrier Level Adjustment
3-5-3. B-Y DEMOD Carrier Balance Adjustment
3-5-5. C 1st AGC Adjustment
3-5-4. B-Y Crosstalk Adjustment
3-5-6. B-Y OUT Level Adjustment
3-4-4. 22.5MHz VCO DC Set Adjustment *1
3-5-2. C PLL Set Adjustment *2
3-5-7. R-Y DEMOD Carrier Balance Adjustment
3-5-8. R-Y Crosstalk Adjustment
3-5-9. R-Y OUT Level Adjustment
3-6-1. Return Video Carrier Frequency Adjustment
3-6-2. Return Video Deviation Adjustment
3-6-3. Return Video Mix Ratio Adjustment
3-7-1. TX PROMPT VIDEO Demodulation Adjustment
3-7-2. TX PROMPT VIDEO BPF Adjustment
3-7-3. RX PROMPT VIDEO Demod. Adjustment
3-7-4. RX PROMPT VIDEO RF AGC Adjustment
3-7-5. RX PROMPT VIDEO Level Adjustment

Note:
*1: Requires only in replacement of X1/DM-94 (22.5 MHz VCO).
*2: Requires only in replacement of X2/DM-94 (45 MHz VCO).

3-3. Video Signal System Adjustment

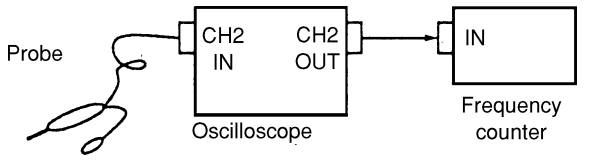
3-3-1. Sub-carrier Frequency Check

Rank: C
Note: Check to see that the signal is not input to the REFERENCE input connector of the rear panel on the CCU.
Before adjustment, warm up the frequency counter more than 4 hours.

Equipment: Digital voltmeter, Oscilloscope, Frequency counter
To be extended: VA-156 board

Adjustment Procedure

1. Test point: IC1892-pin 14 (GND: E7)/VA-156 board
   Adjusting point: ◓RV1891 (LOCAL SC)/VA-156 board
   Specification: +2.5 ±0.1 V dc
2. Connect the oscilloscope and the frequency counter as follows.



3. Test point: TP29 (GND: E7)/VA-156 board
   Adjusting point: Potentiometer on the top of ◓CP1891
   Specification: [For NTSC] 3,579, 545 ±2 Hz
   [For PAL] 4,433,619 ±2 Hz

3-3-2. SC Phase Adjustment

Rank: B
Equipment: Vectorscope
To be extended: VA-156 board

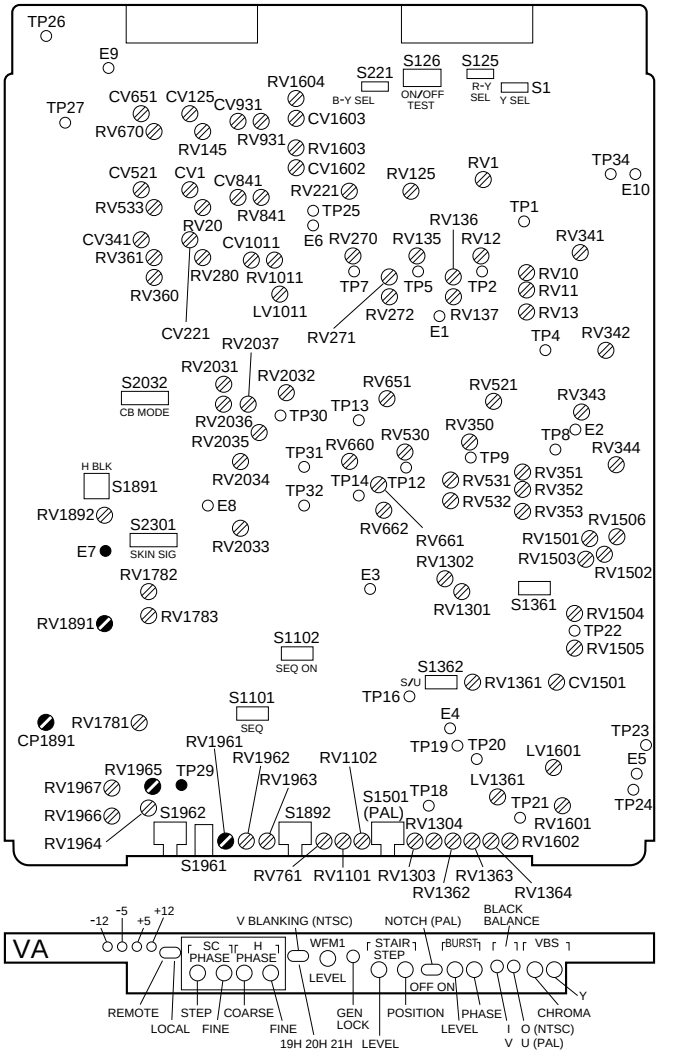
Preparation

- Gen-lock CCU-700A/700AP and Video signal generator.
- BARS button/MSU-700 → "ON"

Test point: VBS 1 OUT connector/CCU rear panel

Adjustment Procedure

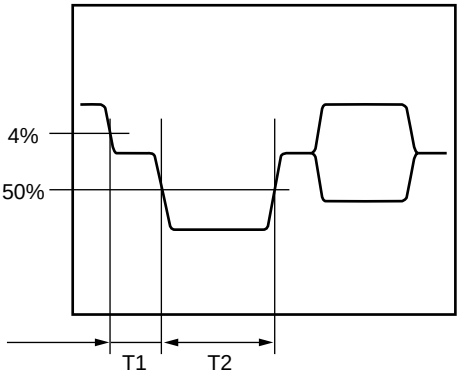
Observe the vectorscope screen and adjust ◓RV1965 (SC PHASE OFFSET)/VA-156 board so that the SC phase variable range (due to ◓RV1961 (SC FINE)/VA-156 board) is 100 ±2 °.



(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-3. SYNC Phase Adjustment

Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation:
• MASTER PEDESTAL volume/MSU-700 → " 99 "
Test point: VBS 1 OUT connector/CCU rear panel
Adjusting point: ⊘RV1782 (SYNC PHASE)/ VA-156 board
⊘RV1783 (SYNC WIDTH)/ VA-156 board
Specification: [For NTSC]
T1 = 1.5 ±0.1 µs (⊘RV1782)
T2 = 4.7 ±0.1 µs (⊘RV1783)
[For PAL]
T1 = 1.65 ±0.1 µs (⊘RV1782)
T2 = 4.7 ±0.1 µs (⊘RV1783)



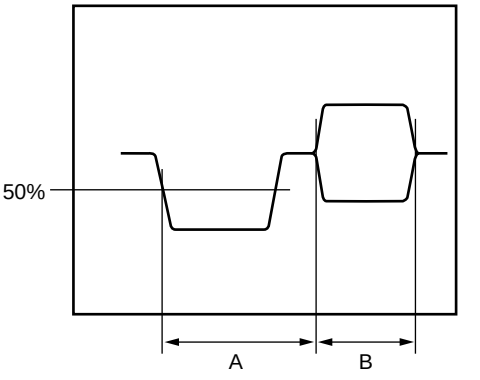
Note: After the adjustment, reset the MASTER PEDESTAL volume to the former position.

3-3-4. BF PULSE Adjustment

Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Test point: VBS 1 OUT connector/CCU rear panel

Adjustment Procedure

1. Adjusting point: ⊘RV1301 (BF START)/ VA-156 board
Specification: [For NTSC] A = 5.3 ±0.1 µs
[For PAL] A = 5.6 ±0.1 µs
2. Adjusting point: ⊘RV1302 (BF STOP)/ VA-156 board
Specification: [For NTSC] B = 9 cycles
[For PAL] B = 2.25 ±0.2 µs



3-3-5. H Phase Adjustment

Rank: B
Equipment: Oscilloscope (CHOP mode)
To be extended: VA-156 board
Preparation

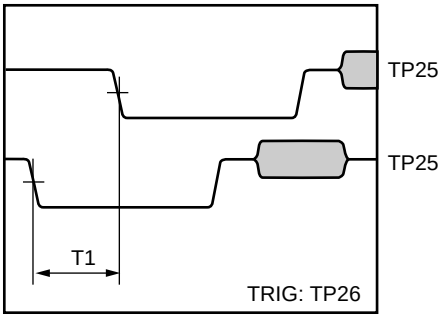
- Gen-lock CCU-700/700P and Video signal generator.
- S1962 (REMOTE REM/LOCAL)/
  VA-156 board → "LOCAL"

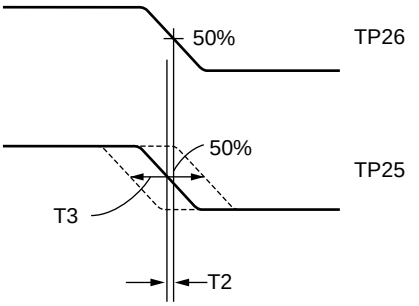
Test point: CH1 TP26 (GND: E9)/
VA-156 board
CH2 TP25 (GND: E6)/
VA-156 board

Adjusting point: ⊘RV1781 (H PHASE RANGE)/
VA-156 board
⊘RV1963 (H PHASE FINE)/
VA-156 board
⊘RV1962 (H PHASE)/
VA-156 board

Adjustment Procedure

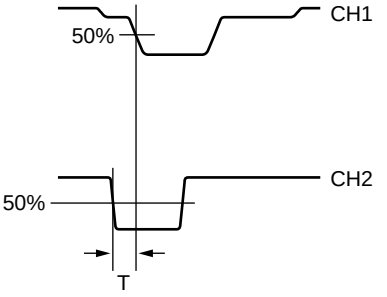
1. Adjust ⊘RV1781 (H PHASE RANGE)/VA-156 board so that the variable range T1 is 4.7 ±0.1µs even when turning ⊘RV1962 (H PHASE)/VA-156 board fully clockwise or fully counterclockwise.
2. Adjust ⊘RV1962 (H PHASE)/VA-156 board so that the width T2 is 0 ±0.1 µs.
3. Confirm that the variable range T3 is 150 to 300 ns even when turning ⊘RV1963 (H PHASE FINE)/VA-156 board fully clockwise or fully counterclockwise. (For setting the SC-H Phase, adjust ⊘RV1963 (H PHASE FINE)/VA-156 board. If not need, set ⊘RV1963 to mechanical center.)

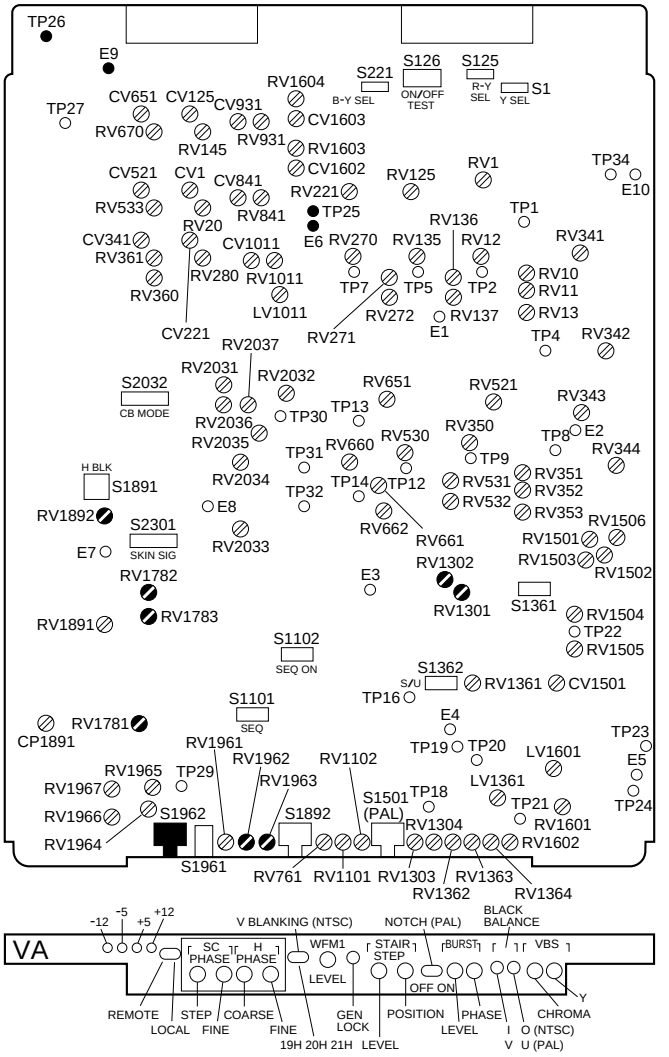




3-3-6. CHU H Phase Adjustment

Rank: B
Equipment: Oscilloscope (CHOP mode)
To be extended: VA-156 board
Test point: CH1 pin A36/extension board
CH2 pin C18/extension board
Adjusting point: ⊘RV1892/VA-156 board
Specification: T = 0 ±0.1 µs





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

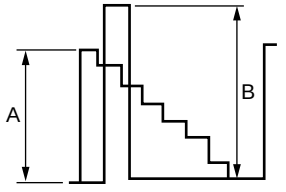
3-3-7. Color Bar Level Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: VA-156 board
Preparation
- BARS button/MSU-700 → "ON"
- VBS 1 OUT connector/CCU rear panel → 75 Ω Termination
- S126 (TEST ON/OFF)/VA-156 board → "OFF"

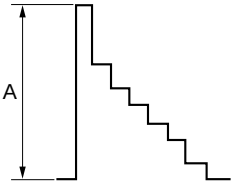
Adjustment Procedure

1. Test point: TP30 (GND: E8)/VA-156 board
   Adjusting point: ◓RV2031 (CB LEVEL-1)/ VA-156 board
   Specification: [For NTSC] A = 525 ±5 mV
   [For PAL] A = 700 ±10 mV
2. Test point: TP30 (GND: E8)/VA-156 board
   Adjusting point: ◓RV2032 (CB LEVEL-2)/ VA-156 board(NTSC only)
   Specification: [For NTSC] B = 700 ±10 mV p-p
3. Repeat the procedures 1 and 2 until the specification is met.

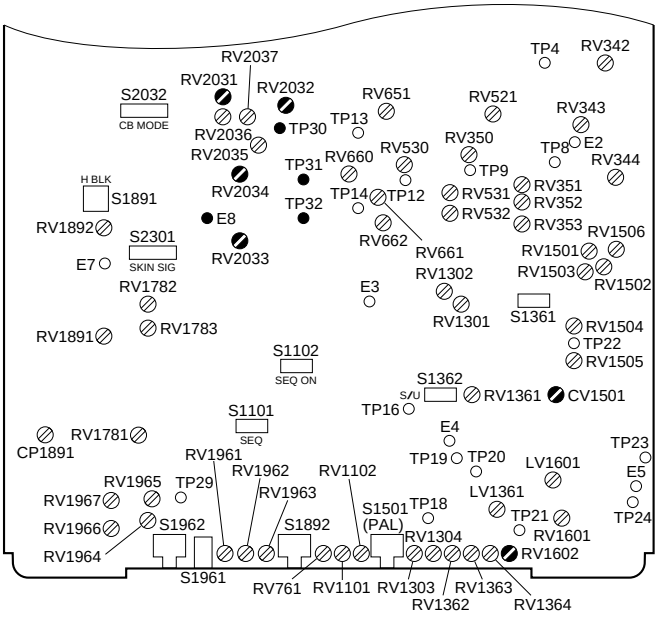
[For NTSC]



[For PAL]



Note: After the adjustment, set as follows.
- S126 (TEST ON/OFF)/VA-156 board→ "ON"



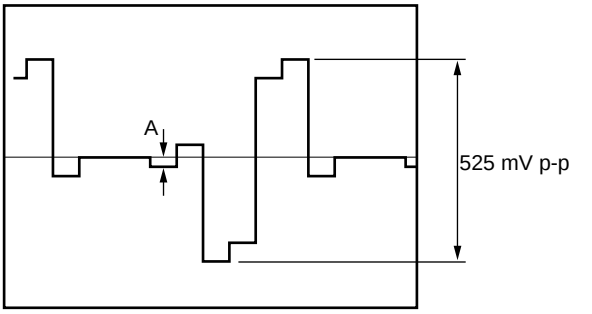
(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-8. Color Bar White Balance Adjustment

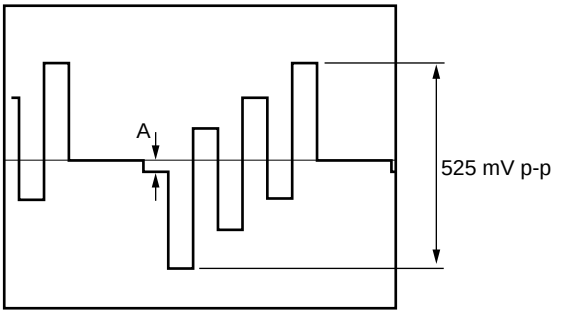
Rank: A
Equipment: Oscilloscope
To be extended: VA-156 board
Preparation
- BARS button/MSU-700 → "ON"

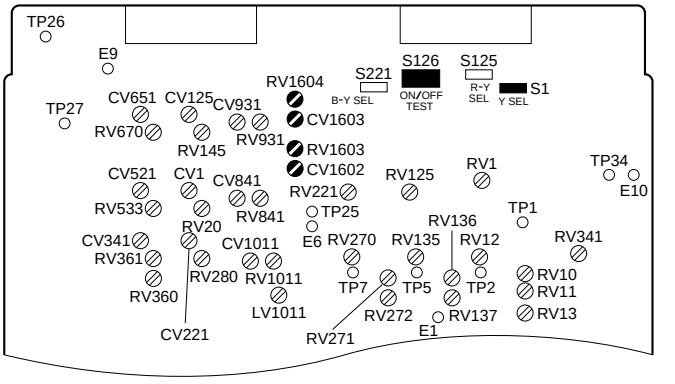
Adjustment Procedure

1. Test point: TP31 (GND: E8)/VA-156 board
   Adjusting point: ◓RV2033 (R BAL)/VA-156 board
   Specification: A = 0 ±5 mV



2. Test point: TP32 (GND: E8)/VA-156 board
   Adjusting point: ◓RV2034 (B BAL)/VA-156 board
   Specification: B = 0 ±5 mV





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-9. VBS 1/2/3 OUT Level Adjustment

Rank: A
Equipment: Oscilloscope, Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"

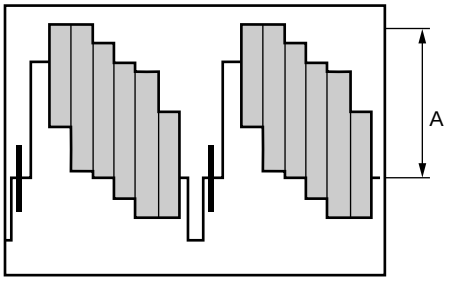
Adjustment Procedure
• Perform adjustment in order of each channels.

VA-156 board

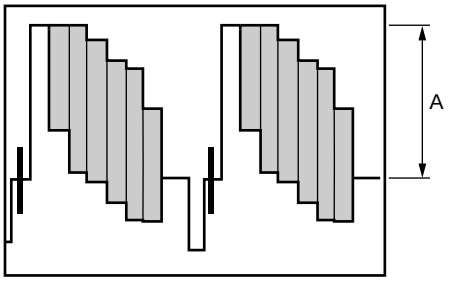
	Test point/rear panel	Adj point	Specification
VBS 1	VBS 1 OUT	⊘RV1602	[For NTSC] A = 100 ±1 IRE
VBS 2	VBS 2 OUT	⊘RV1603	
VBS 3	VBS 3 OUT	⊘RV1604	[For PAL] A = 700 ±10 mV

(Note: Perform VBS 1 OUT Level Adjustment first.)

[For NTSC]

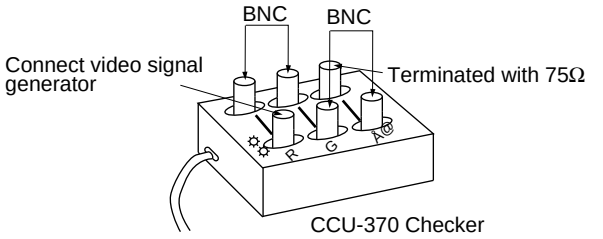


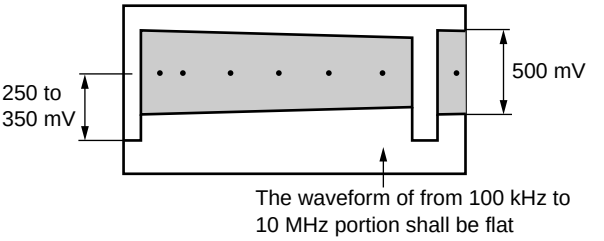
[For PAL]



3-3-10. VBS 1/2/3 OUT Frequency Response Adjustment

Rank: C
Equipment: Waveform monitor,Video signal generator
To be extended: VA-156 board
Preparation
• S1(Y SEL)/VA-156 → AUX
• BARS button/MSU-700 → "OFF"
• Connect CCU-370 Checker to CN3/VA-156 board.
• Feed the H SWEEP signal of video signal generator to R terminal.



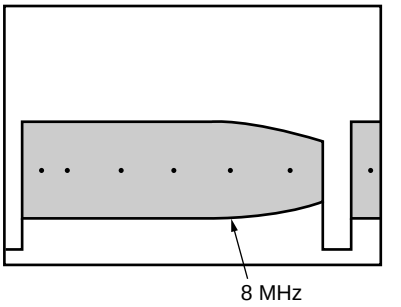


Adjustment procedure:
• Adjust the following controls nutil the specifications are satisfied.

	Test point/rear panel	Adjustment point
VBS1	VBS1 OUT	⊘CV1501
VBS2	VBS2 OUT	⊘CV1602
VBS3	VBS3 OUT	⊘CV1603

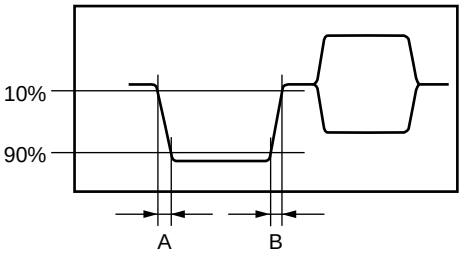
(Note:Perform VBS1 OUT Frequency response Adjustment first.)

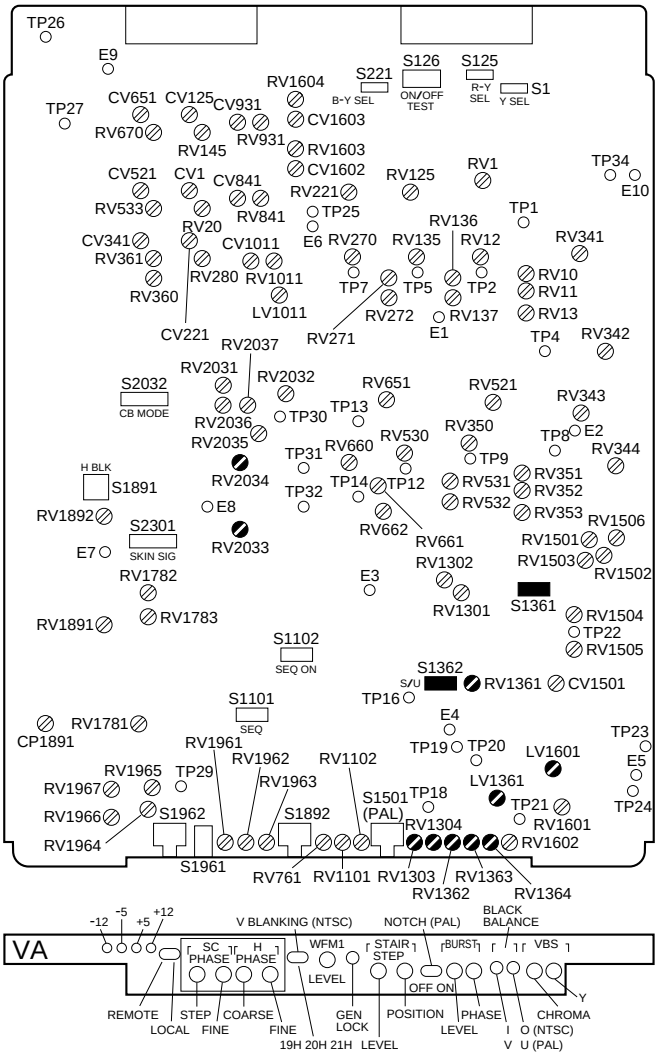
Specification: The waveform of from 100 kHz to 8 MHz portion shall be flat.



3-3-11. VBS SYNC Phase Adjustment

Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Test point: VBS 1 OUT connector/CCU rear panel
Adjusting point: ◓LV1601 (VBS SYNC PHASE)/ VA-156 board
Specification: [For NTSC] A ≈ B = 140 ±20 ns
[For PAL] A ≈ B = 250 ±50 ns
(Be sure to disappear the overshoot and undershoot.)





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-12. I (V)/Q (U) Carrier Balance Adjustment

Note
Make sure that the adjustment for vectorscope must be completed.

Rank: A
Equipment: Vectorscope
To be extended: VA-156 board
Preparation
- Vectorscope mode → MAX GAIN mode
- BARS button/MSU-700 → "ON"

Test point: VBS 1 OUT connector/CCU rear panel
Adjusting point: ◓RV1362 (I/V BLACK BAL)/ VA-156 board
◓RV1363 (Q/U BLACK BAL)/ VA-156 board
Specification: Adjust so that the beam spot of black level is located in center of the vectorscope screen. (If the beam spot of color bar white level is not located exactly in center of the vectorscope screen, adjust ◓RV2033 (R BAL)/ VA-156 board and ◓RV2034 (B BAL)/VA-156 board alternately.)

Note: After the adjustment, set as follows.
- GAIN switch/Vectorscope→ 75% CAL.

http://getMANUAL.com

3-3-13. Color Vector Adjustment

Rank: B
Equipment: Vectorscope (EXT REF mode)
To be extended: VA-156 board
Preparation

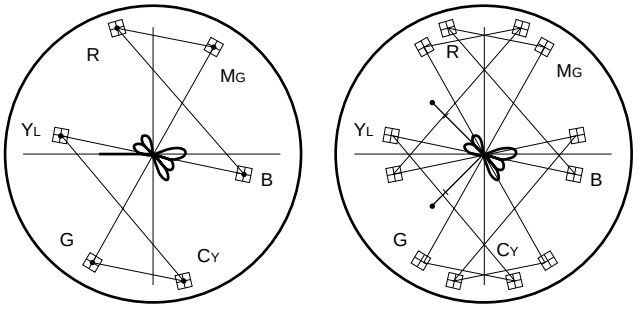
- GAIN switch/Vectorscope → 75% CAL
- Adjust the PHASE control on the vectorscope so that the burst spot is overlapped to the 75% axis.
- BARS button/MSU-700 → "ON"
- S1361 (I/V ON/OFF)/VA-156 board → "ON"
- S1362 (Q/U ON/OFF)/VA-156 board → "ON"

Test point: VBS 1 OUT connector/rear panel

Adjustment Procedure

- Adjust the following controls aiternately so that each beam spot is located inside the reference frame "⊞".
  ⊘LV1361(SC QUAD)/VA-156 board
  ⊘RV1364(CHROMA LEVEL)/VA-156 board
  ⊘RV1361(Q/U BAL)/VA-156 board

[For NTSC] **[For PAL]**



Note: After the adjustment, carry out "3-3-14. Burst Adjustment" .

3-3-14. Burst Adjustment

Rank: B
Equipment: Vectorscope (INT REF mode)
To be extended: VA-156 board
Preparation

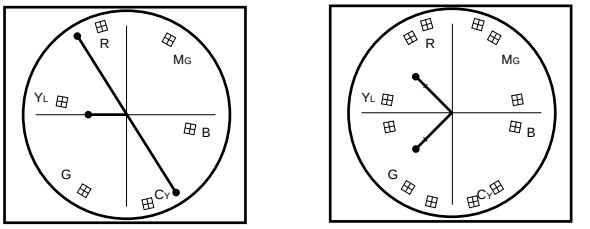
- BARS button/MSU-700 → "ON"
- S1361 (I/V ON/OFF)/VA-156 board → "ON"
- S1362 (Q/U ON/OFF)/VA-156 board → "OFF"

Test point: VBS 1 OUT connector/CCU rear panel (75 Ω terminated)

Adjustment Procedure

1. Overlap the burst component to B-Y axis with PHASE control on the vectorscope.
2. Adjust the burst level properly with ⊘RV1303 (BF GAIN)/VA-156 board.
3. Confirm that the burst level at VIDEO OUT is 40 ±2 IRE(for PAL:300 ±10 mV) using the waveform monitor.
4. Overlap both tips of the I (V) signal component to I (V) axis with ⊘RV1304 (BF PHASE)/VA-156 board.

[For NTSC] **[For PAL]**



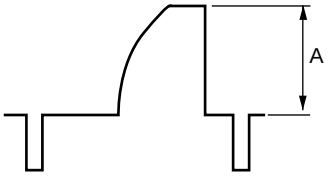
Note: After the adjustment, set as follows.

- S1362 (Q/U ON/OFF)/VA-156 board → "ON"
- Re-check "3-3-13. Color Vector Adjustment".

3-3-15. CONTRAST Y Level Adjustment

Rank: B
Equipment: Oscilloscope, Waveform monitor
To be extended: VA-156 board
Preparation
1. BARS button/MSU-700 → "OFF"
2. S126 (TEST ON/OFF)/VA-156 board → "ON"
3. CONTRAST ON/OFF button/MSU-700 → "OFF"

Test point: VBS 1 OUT connector/CCU rear panel (75 Ω terminated)
Adjusting point: ⊘RV341 (CONTRAST Y)/ VA-156 board
Specification: [For NTSC] A = 100 ±2 IRE
[For PAL] A = 700 ±10 mV

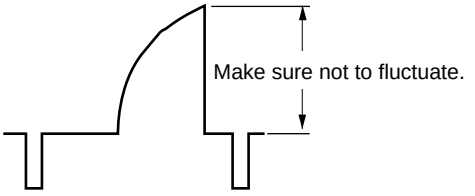


3-3-16. Contrast Level Adjustment

Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
- BARS button/MSU-700 → "OFF"
- TEST 1 button/MSU-700 → "ON"
- S126 (TEST ON/OFF)/VA-156 board → "ON"
- Set the CONTRAST adjustment value that is displayed on the display block to "99" with control knob.

Test point: VBS 1 OUT connector/CCU rear panel
Adjusting point: ⊘RV342 (GAMMA LEVEL)/VA-156 board

Adjustment Procedure
- Adjust ⊘RV342 (GAMMA LEVEL)/VA-156 board so that the signal level at VBS 1 OUT connector/CCU rear panel is not fluctuated even if CONTRAST button/ MSU-700 is turned ON or OFF.



Note: After the adjustment, re-check "3-3-15. CONTRST Y Level Adjustment" .

3-3-17. MONO R-Y/B-Y Balance Adjustment

Rank: B
Equipment: Vectorscope
To be extended: VA-156 board

Preparation

1. BARS button/MSU-700 → "ON"
   S126 (TEST ON/OFF)/VA-156 board → "ON"
2. SATURATION button/MSU-700 → "ON"
3. Set the SATURATION CONTROL adjustment value that is displayed on the display block to "–99" with the MSU-700 menu operation.
4. Vectorscope mode→ MAX GAIN mode

Test point: VBS 1 OUT connector/CCU rear panel

Adjustment Procedure

- Observe the vectorscope screen and adjust ⊘RV521 (MONO R-Y BAL) and ⊘RV651 (MONO B-Y BAL)/ VA-156 board alternately so that the dot is focused at the center on the vectorscope screen.

Note: After the adjustment, set as follows.

- Set the SATURATION CONTROL adjustment value that is displayed on the display black to "0" with the MSU-700 menu operation.
- GAIN switch/Vectorscope→ 75% CAL

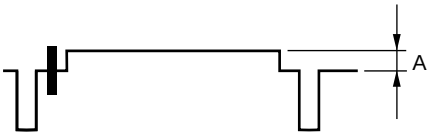
3-3-18. Y BLACK Adjustment

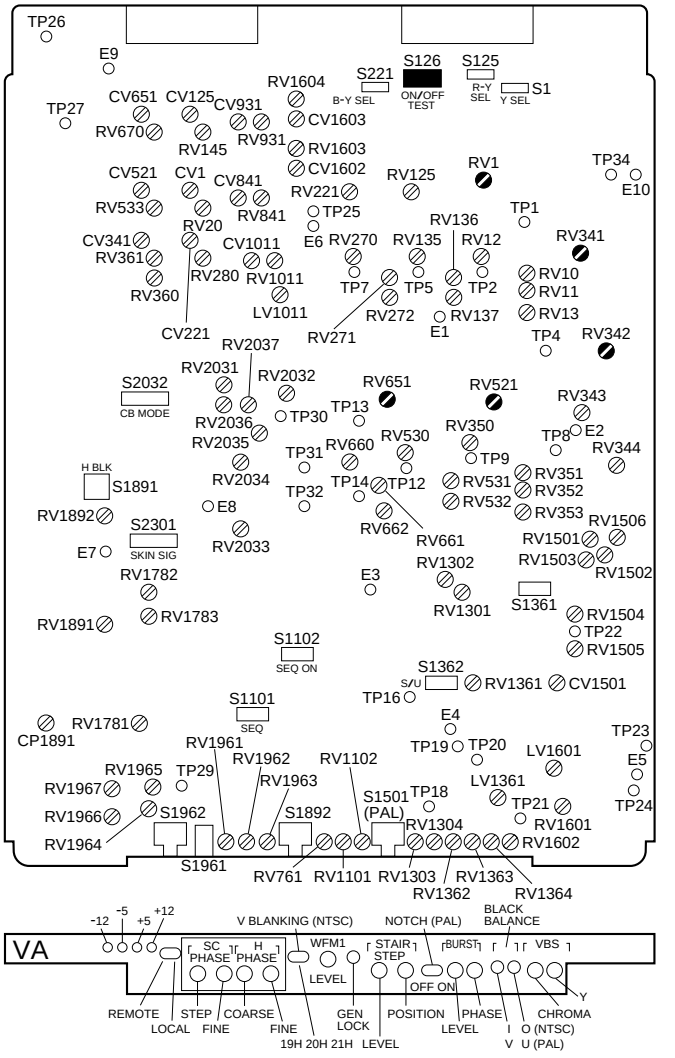
Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board

Preparation

- Set the MASTER BLACK adjustment value that is displayed on the display block to "–99" with the MASTER BLACK control/MSU-700.

Test point: VBS 1 OUT connector/CCU rear panel
Adjusting point: ⊘RV1 (Y BLK)/VA-156 board
Specification: [For NTSC] A = 0 ±1 IRE
[For PAL] A = 0 ±7 mV





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-19. Y OUT Level Adjustment

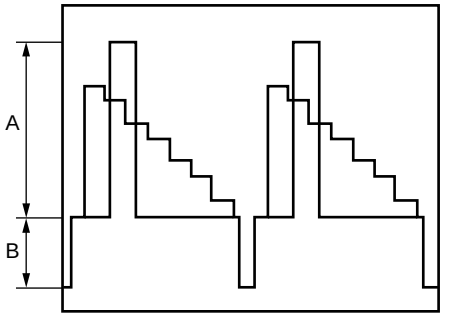
Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"
Test point: Y OUT connector/CCU rear panel

Adjustment Procedure

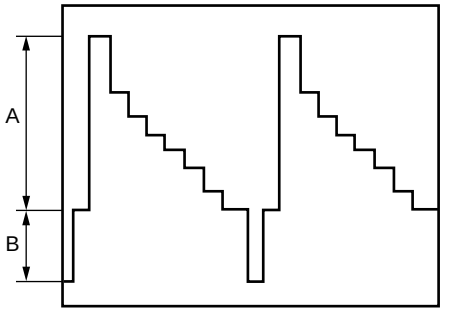
VA-156 board

	Adjusting point	Specifications
Y Level	⊘RV361	[For NTSC] A = 100 ±1 IRE [For PAL] A = 700 ±10 mV
SYNC Level	⊘RV360	[For NTSC] B = 40 ±1 IRE [For PAL] B = 300 ±7 mV

[For NTSC]

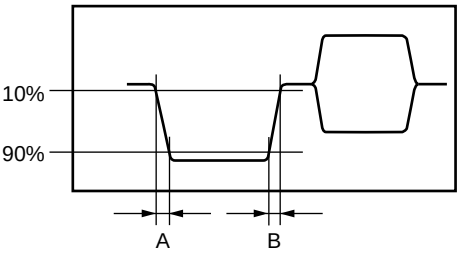


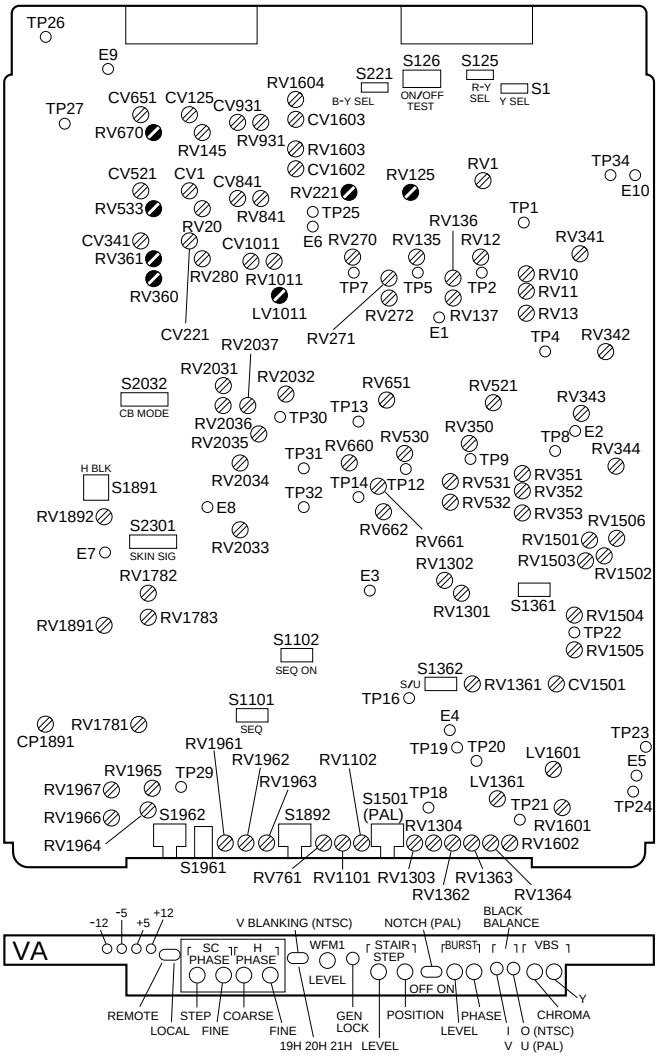
[For PAL]



3-3-20. Y SYNC Phase Adjustment

Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Test point: Y OUT connector/rear panel
Adjusting point: ⊘LV1011 (Y SYNC PHASE)/ VA-156 board
Specification: [For NTSC]
A ≈ B = 140 ±20 ns
[For PAL]
A ≈ B = 250 ±50 ns
(Be sure to disappear the overshoot and undershoot.)





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-21. R-Y/B-Y Black Balance Adjustment

Rank: A
Equipment: Vectorscope
To be extended: VA-156 board
Preparation

- CLOSE button/MSU-700→ "ON"
- Vectorscope mode→ MAX GAIN mode
- Set the MASTER BLACK adjustment value that is displayed on the display block to "–99" with the MASTER BLACK control/MSU-700.

Test point: VBS 1 OUT connector/CCU rear panel

Adjustment Procedure

- Observe the vectorscope screen and adjust ⊘RV125 (R-Y BLK) and ⊘RV221 (B-Y BLK)/VA-156 board so that the beam spot of black level sit at the nearly center of the vectorscope.

Note: After the adjustment, set as follows.

- GAIN switch/Vectorscope→ 75% CAL
- MASTER BLACK control/MSU-700→ "0"

3-3-22. R-Y/B-Y OUT Level Adjustment

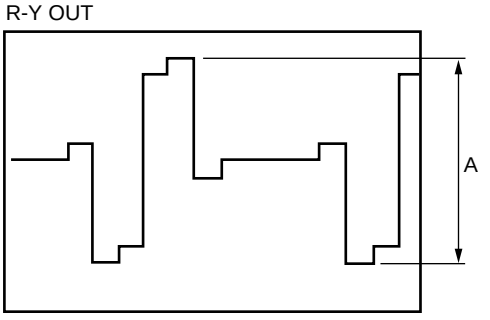
Rank: A
Equipment: Oscilloscope
To be extended: VA-156 board
Preparation

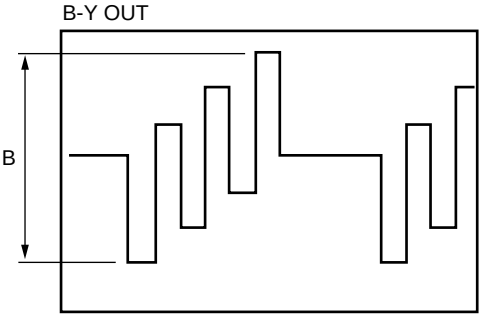
- BARS button/MSU-700 → "ON"
- R-Y OUT connector/CCU rear panel → 75 Ω Terminated
- B-Y OUT connector/CCU rear panel → 75 Ω Terminated

Adjustment Procedure

VA-156 board

	Test point/ rear panel	Adj. point	Specifications
R-Y	R-Y OUT	⊘RV533	[For NTSC] A = 700 ±5 mV p-p [For PAL] A = 525 ±5 mV p-p
B-Y	B-Y OUT	⊘RV670	[For NTSC] B = 700 ±5 mV p-p [For PAL] B = 525 ±5 mV p-p



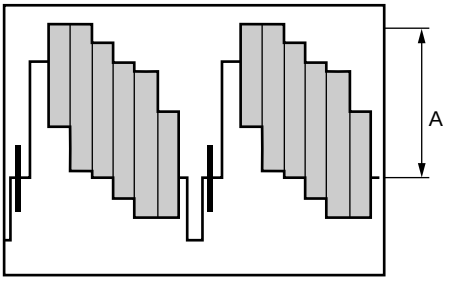


3-3-23. WF 1 OUT Level Adjustment

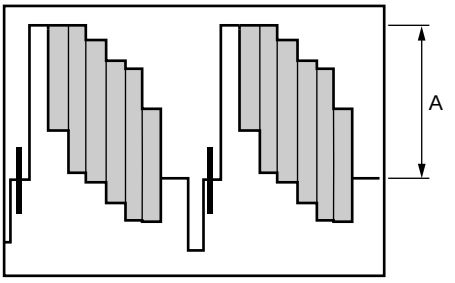
Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
- Connect the RCP-74x to the CCU.
- BARS button/RCP-74x → "ON"
- MONITOR SELECT button/RCP-74x → "ENC"
- WF 1 OUT connector/CCU rear panel → 75 Ω Terminated

Test point: WF 1 OUT connector/CCU rear panel
Adjusting point: ⊘RV761 (WF1 VIDEO LEVEL)/ VA-156 board
Specification: [For NTSC] A = 100 ±1 IRE
[For PAL] A = 700 ±7 mV

[For NTSC]



[For PAL]

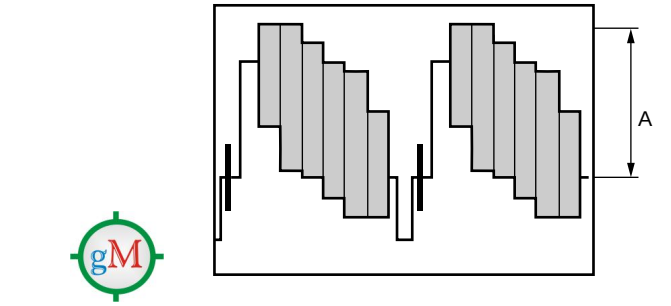


3-3-24. PIX 1 OUT Level Adjustment

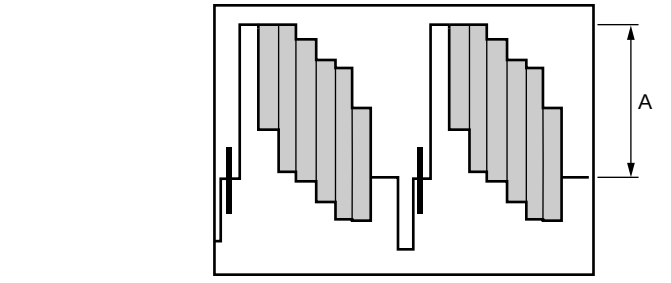
Rank: B
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
- BARS button/RCP-74x → "ON"
- MONITOR SELECT button/RCP-74x → "ENC"
- PIX 1 OUT connector/CCU rear panel → 75 Ω Terminated

Test point: PIX 1 OUT connector/CCU rear panel
Adjusting point: ⊘RV931 (PIX1 VIDEO LEVEL)/ VA-156 board
Specification: [For NTSC] A = 100 ±1 IRE
[For PAL] A = 700 ±7 mV

[For NTSC]



[For PAL]



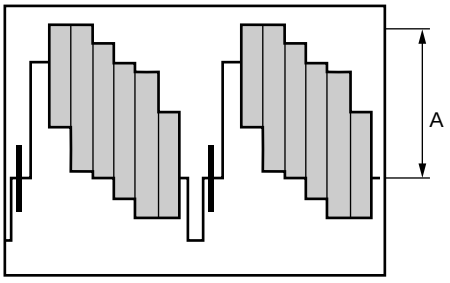
Note: After the adjustment, set as follows.
- Connect the MSU-700 to the CCU.

3-3-25. WF 2 OUT Level Adjustment

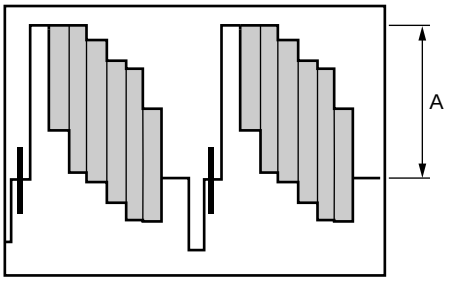
Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
- BARS button/MSU-700 → "ON"
- WAVEFORM MONITOR button/MSU-700 → "ENC"
- WF 2 OUT connector/CCU rear panel → 75 Ω Terminated

Test point: WF 2 OUT connector/CCU rear panel
Adjusting point: ◓RV841 (WF2 VIDEO LEVEL)/ VA-156 board
Specification: [For NTSC] A = 100 ±1 IRE
[For PAL] A = 700 ±7 mV

[For NTSC]



[For PAL]

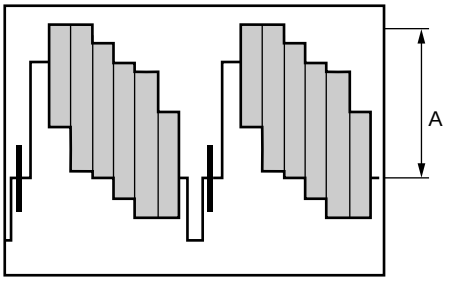


3-3-26. PIX 2 OUT Level Adjustment

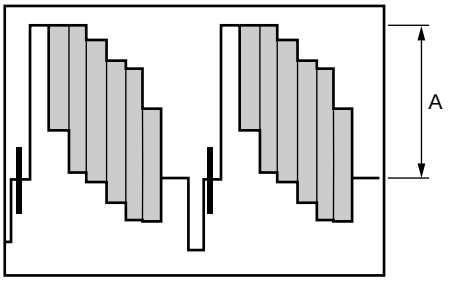
Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
- BARS button/MSU-700 → "ON"
- PICTURE MONITOR button/MSU-700 → "ENC"

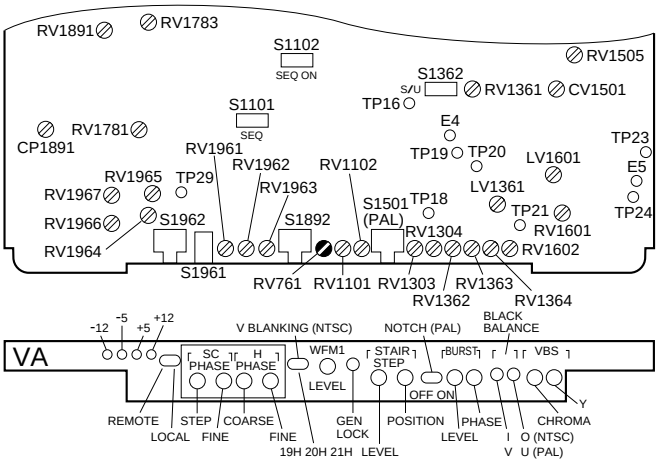
Test point: PIX 2 OUT connector/CCU rear panel
Adjusting point: ◓RV1011 (PIX2 VIDEO LEVEL)/ VA-156 board
Specification: [For NTSC] A = 100 ±1 IRE
[For PAL] A = 700 ±7 mV

[For NTSC]

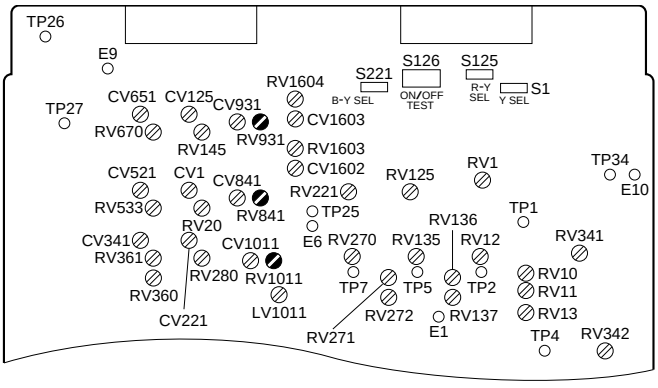


[For PAL]





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)



(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

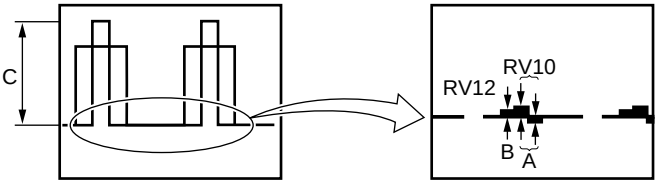
3-3-27. G Level Adjustment

Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"
Test point: WF 2 OUT connector/CCU rear panel

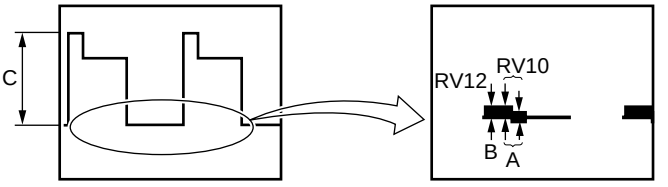
Adjustment Procedure

1. WAVEFORM MONITOR button/MSU-700 → "G"
2. Adjusting point: ⊘RV10 (G MAT BAL1)/ VA-156 board
   ⊘RV11 (G MAT BAL2)/ VA-156 board
   Specification: [For NTSC] A = B = 0^{+1}_{-0} IRE
   [For PAL] A = B = 0^{+7}_{-0} mV
3. Adjust ⊘RV12 (G WF LEVEL)/VA-156 board so that the white level "C" is equal even if WAVEFORM MONITOR button/MSU-700 is set to "G" or "ENC".
   Specification: Level difference =
   [For NTSC] 0 ±1 IRE
   [For PAL] 0 ±7 mV

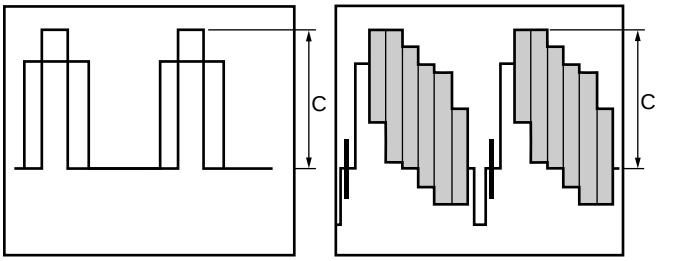
[For NTSC]



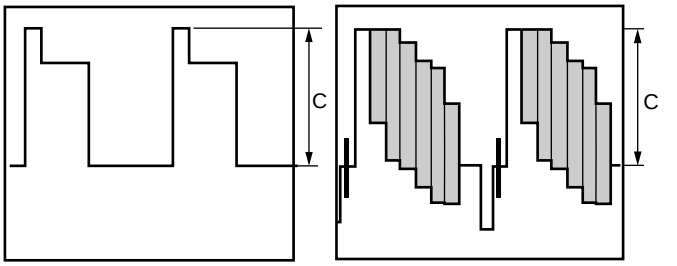
[For PAL]



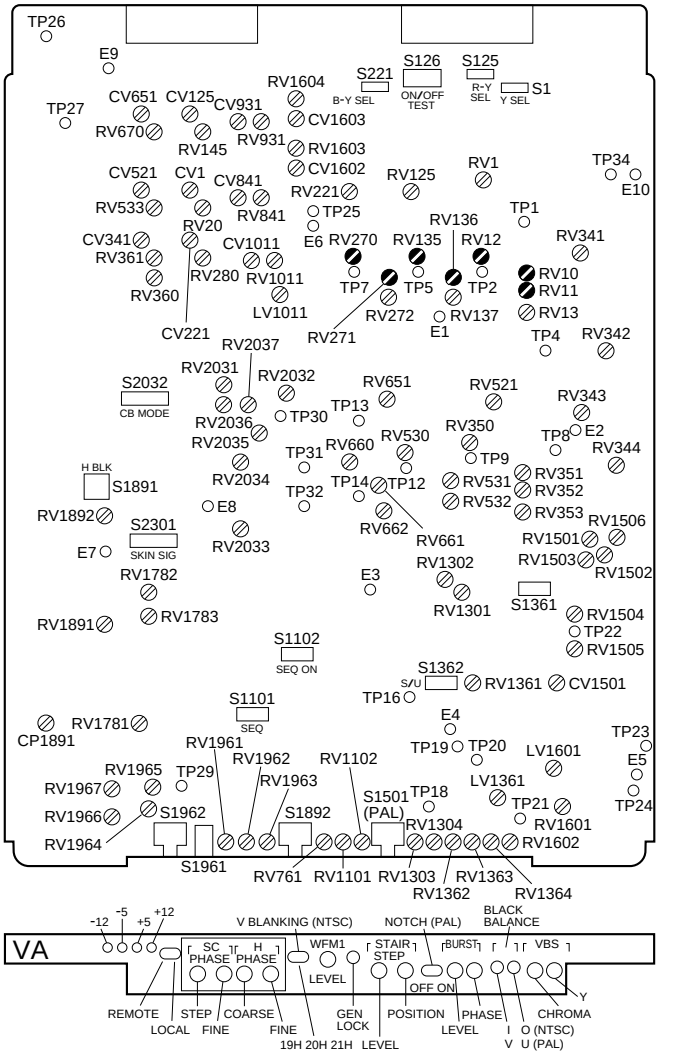
[For NTSC]



[For PAL]



Note: After the adjustment, set as follows.
• WAVWFORM MONITOR button/MSU-700 → "ENC"



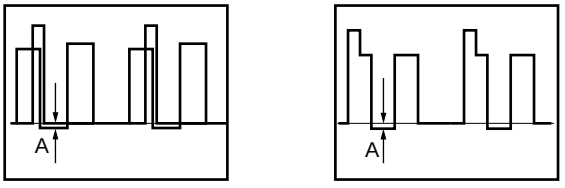
(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-28. R Level Adjustment

Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"
Test point: WF 2 OUT connector/CCU rear panel

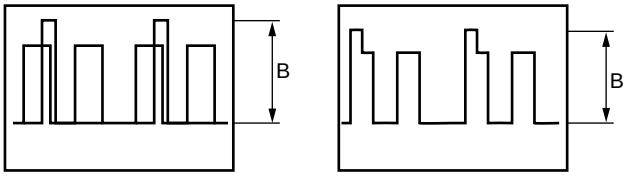
Adjustment Procedure
1. WAVEFORM MONITOR button/MSU-700 → "R"
2. Adjusting point: ⊘RV135 (R MATRIX BAL)/ VA-156 board
   Specification: [For NTSC] A = B = 0^{+1}_{-0} IRE
   [For PAL] A = B = 0^{+7}_{-0} mV

[For NTSC] **[For PAL]**



3. Adjust ⊘RV136 (R WF LEVEL)/VA-156 board so that the level "b" is equal even if WAVEFORM MONITOR button/MSU-700 is set to "R" or "G".
   Specification:
   Level difference =
   [For NTSC] 0 ±1 IRE
   [For PAL] 0 ±7 mV

[For NTSC] **[For PAL]**



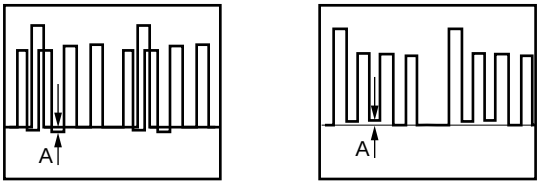
Note: After the adjustment, set as follows.
• WAVWFORM MONITOR button/MSU-700 → "ENC"

3-3-29. B Level Adjustment

Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"
Test point: WF 2 OUT connector/CCU rear panel

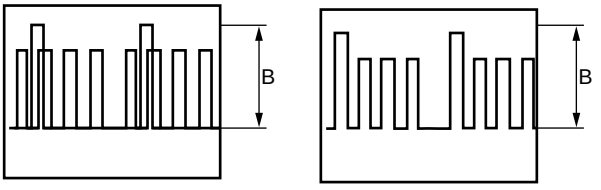
Adjustment Procedure
1. WAVEFORM MONITOR button/MSU-700 → "B"
2. Adjusting point:⊘RV270 (B MATRIX BAL)/ VA-156 board
   Specification: [For NTSC] A = B = 0^{+1}_{-0} IRE
   [For PAL] A = B = 0^{+7}_{-0} mV

[For NTSC] **[For PAL]**



3. Adjust ⊘RV271 (B WF LEVEL)/VA-156 board so that the level "b" is equal even if WAVEFORM MONITOR button/MSU-700 is set to "B" or "G".
   Specification:
   Level difference =
   [For NTSC] 0 ±1 IRE
   [For PAL] 0 ±7 mV

[For NTSC] **[For PAL]**

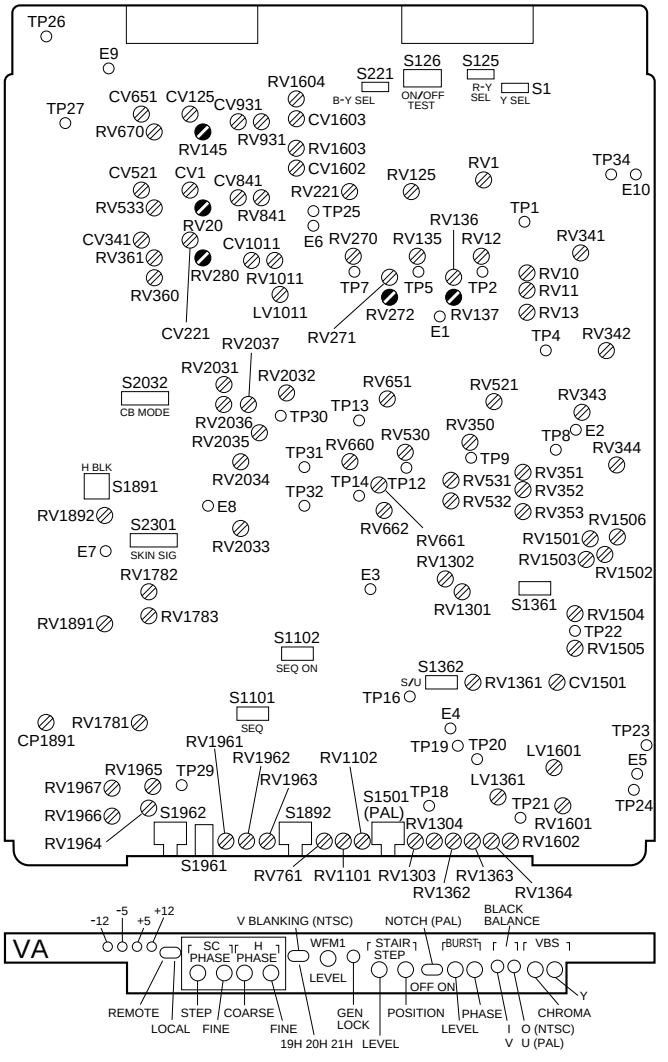


Note: After the adjustment, set as follows.
• WAVWFORM MONITOR button/MSU-700 → "ENC"

3-3-30. R/B DC Offset Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: VA-156 board
Preparation
• CLOSE button/MSU-700 → "ON"
Test point: WF 2 OUT connector/CCU rear panel (75 Ω Terminated)

Adjustment Procedure
• Adjust ⊘RV137 (R DC BAL) and ⊘RV272 (B DC BAL)/VA-156 board so that the DC levels are equal respectively even if WAVEFORM MONITOR button/ MSU-700 is set to "G", "R" or "B".
Specification: Level difference = 0 ±1 mV



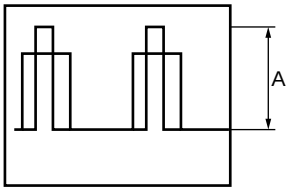
(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-31. R/G/B OUT Level Adjustment

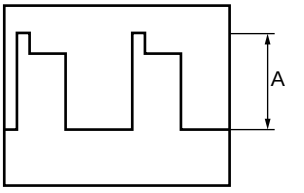
Rank: A
Equipment: Waveform monitor
To be extended: VA-156 board
Preparation
• BARS button/MSU-700 → "ON"

	Test point/ rear panel	Adj. point	Specifications
G	G OUT	⊘RV20	A = 700 ±10 mV p-p (75 Ω terminatd)
R	R OUT	⊘RV145	
B	B OUT	⊘RV280	

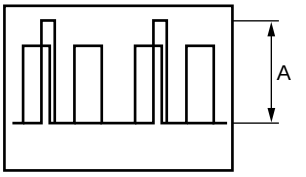
[For NTSC]G-ch



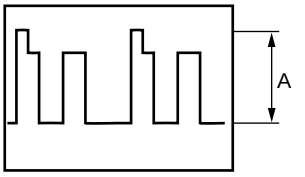
[For PAL]G-ch



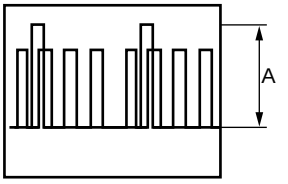
[For NTSC]R-ch



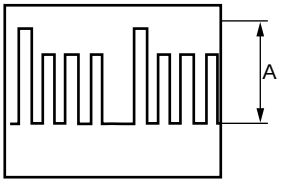
[For PAL]R-ch



[For NTSC]B-ch



[For PAL]B-ch



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3-3-32. NOTCH Adjustment PAL model only

Rank: C

Note: This adjustment is described for only PAL model.

Equipment: Waveform monitor,
Video signal generator (SWEEP signal)

To be extended: VA-156P board

Preparation

- S1 (Y SEL)/VA-156P board → "AUX"
- Connect the connector of CCU-370 Checker to CN3 connector on VA-156P board.
- Input SWEEP signal of Video signal generator to CCU-370 Checker so that the video waveform is appeared at TP1/VA-156P board.
- S1501(NOTCH)/VA-156P board → "ON"
- ⊘RV1501(NOTCH FREQ)/VA-156P board → Mechanical center
- ⊘RV1502(NOTCH WIDTH)/VA-156P board → Mechanical center
- ⊘RV1503(NOTCH LEVEL)/VA-156P board → Mechanical center

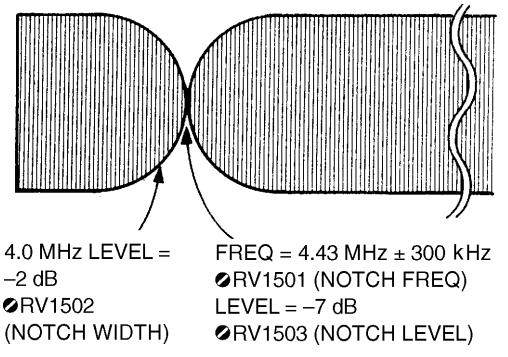
Test point: VBS1 OUT connector/CCU rear panel

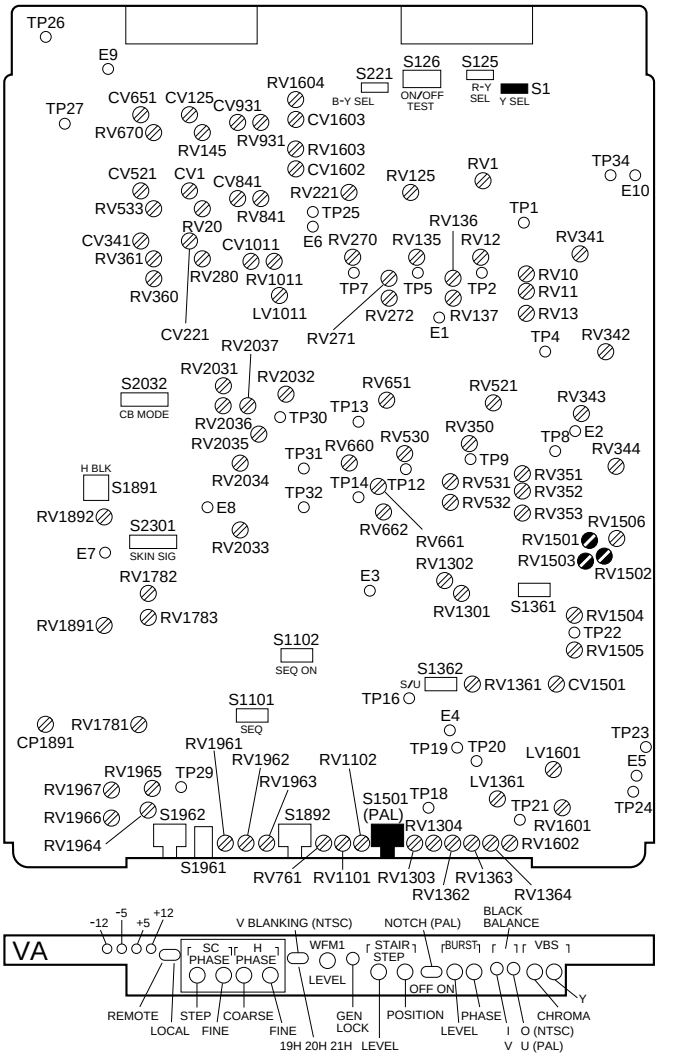
Adjustment Procedure

1. Adjust⊘RV1501(NOTCH FREQ) so that the frequency, that is maximally attenuated, is 4.43 MHz ± 300 kHz.
2. Adjust ⊘RV1502(NOTCH WIDTH) so that the 4.0 MHz Level is –2 dB.
3. Adjust ⊘RV1503(NOTCH LEVEL) so that the 4.43 MHz Level is –7 dB.

Note: After adjustment, set as follows.

- S1 (Y SEL)/VA-156P board → "CAM"
- Remove the CCU-370 Checker from CN3 connector on VA-156P board.





(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-3-33. STAIR CASE Adjustment

Rank: C

Note: This adjustment is for temporary adjustment when repairing the STAIR CASE block. In the system set up, the readjustment is required to match the characteristic of waveform monitor.

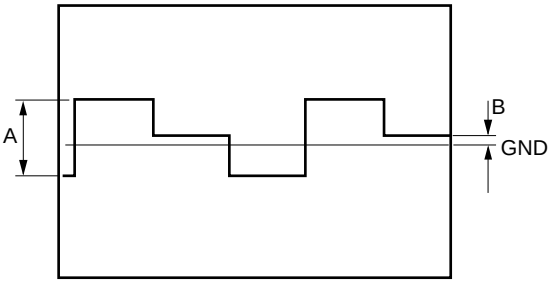
Equipment: Oscilloscope

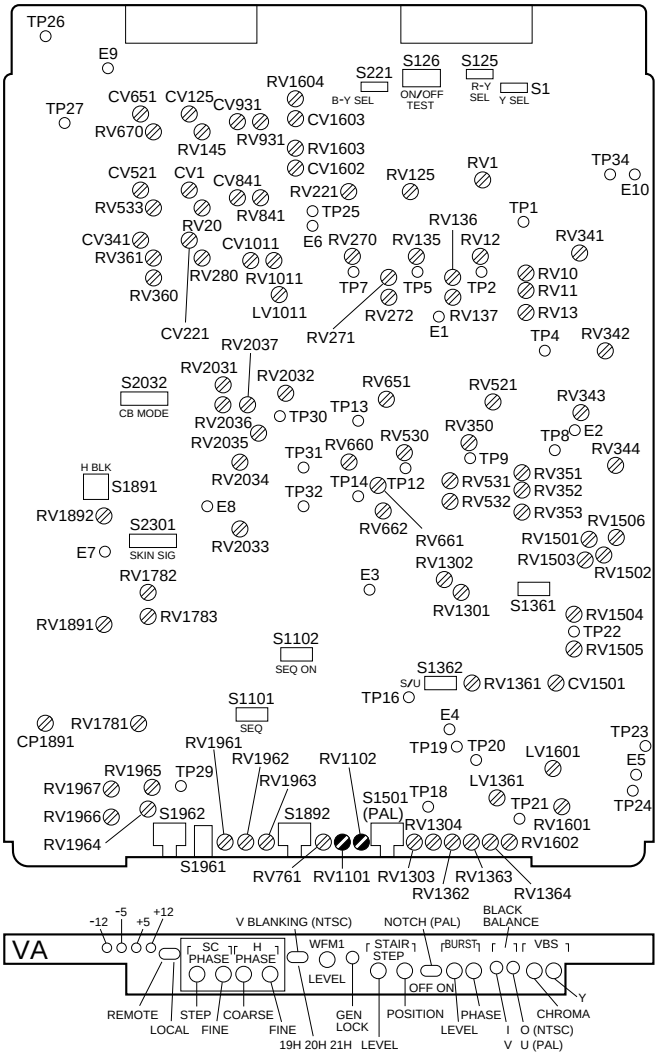
To be extended: VA-156 board

Test point: pin C66 (GND: pin D66)/ extension board

Adjusting point: ⊘RV1102 (STAIR CASE POSITION)/ VA-156 board
⊘RV1101 (STAIR CASE LEVEL)/ VA-156 board

Specification: A = 10.0 ±0.5 V p-p (⊘RV1101)
B = 0 ±0.5 V dc (⊘RV1102)



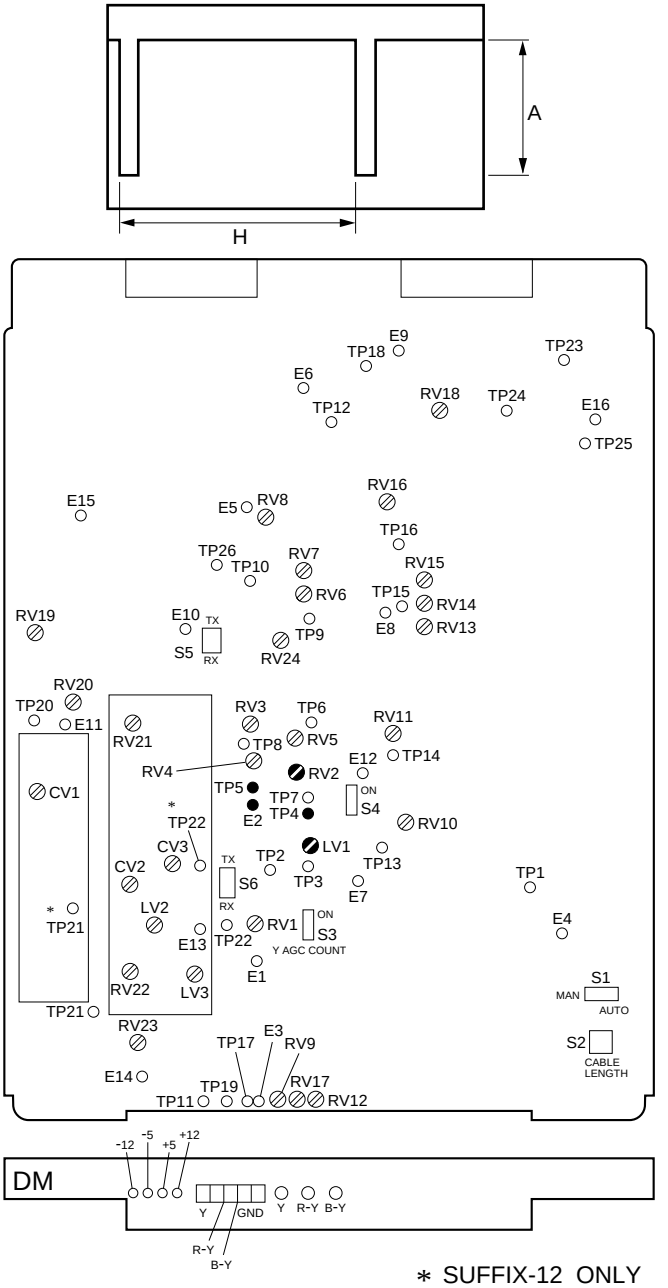


(PANEL SIDE) VA-156 BOARD (COMPONENT SIDE)

3-4. Y Cable Compensation System Adjustment

3-4-1. SYNC SEP Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
• CLOSE button/MSU-700 → "ON"
Test point: TP4 (GND: E2)/DM-94 board
Adjusting point: ⊘LV1 (Y RF TUNE)/DM-94 board
Specification: Level "A" = maximum level

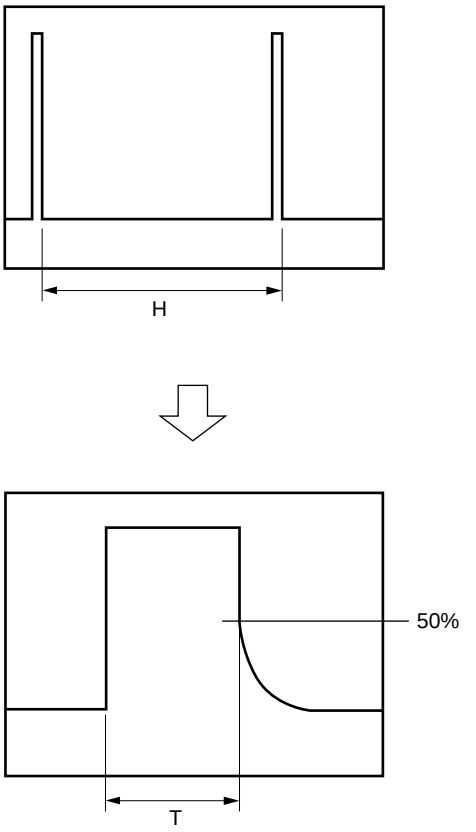


∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

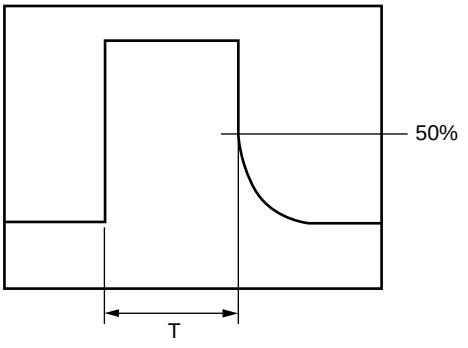
3-4-2. BLACK Pulse Width Adjustment

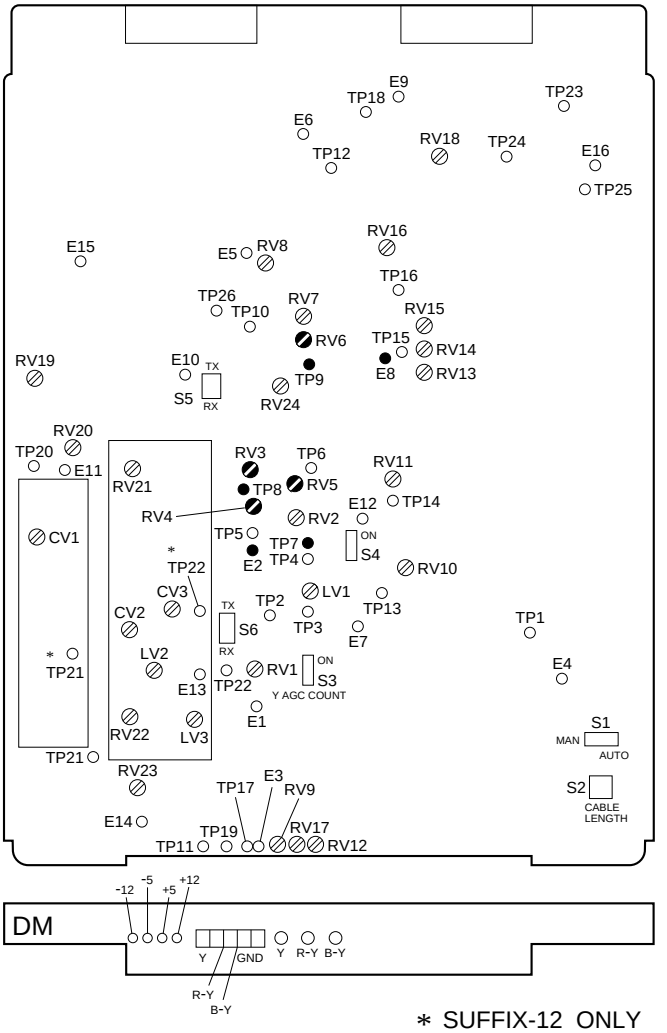
Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP5 (GND: E2)/DM-94 board
Adjusting point: ⊘RV2 (BLACK S/H)/DM-94 board
Specification: T = 1.7 ±0.1 μs



3-4-3. SYNC Sample Hold Pulse Width Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP8 (GND: E2)/DM-94 board
Adjusting point: ◓RV5 (SYNC S/H)/DM-94 board
Specification: T = 1.3 ±0.1 µs





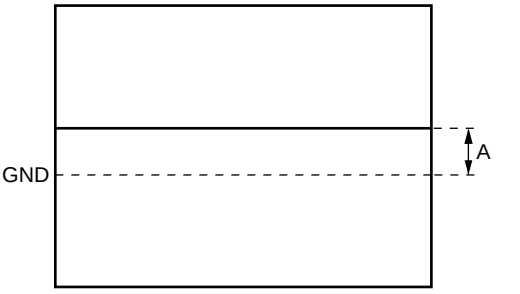
∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-4-4. 22.5 MHz VCO DC Set Adjustment

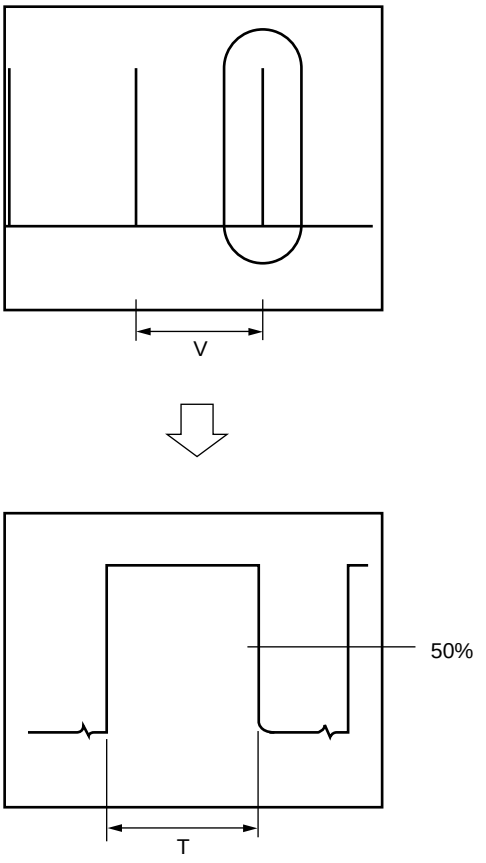
Rank: C
Note: Make sure that 45MHz frequency on the MD-83 board (BVP-700/700P) should be correct.

Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP9 (GND: E8)/DM-94 board
Adjusting point: ◓RV6 (VCO DC SET)/DM-94 board
Specification: A = 0 ±30 mV dc



3-4-5. Sample Pulse Width Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP7 (GND: E2)/DM-94 board
Adjusting point: ⊘RV4 (SAMPLE S/H)/DM-94 board
Specification: T = 40.0 ±2.0 µs

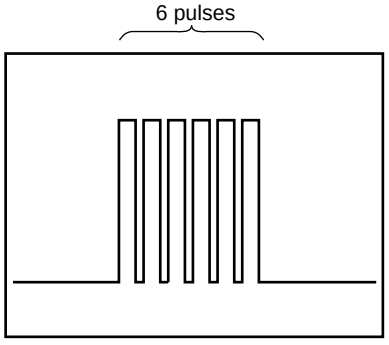


3-4-6. Sample Pulse V Gate Width Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP7 (GND: E2)/DM-94 board
Adjusting point: ⊘RV3 (SAMPLE GATE)/DM-94 board

Adjustment Procedure

- Confirm that the sample pulses have six pulses in both odd and even fields.
  If not met, adjust ⊘RV3 (SAMPLE GATE)/DM-94 board so that the sample pulses have six pulses in both odd and even fields.



3-4-7. 22.5MHz Carrier Level Adjustment

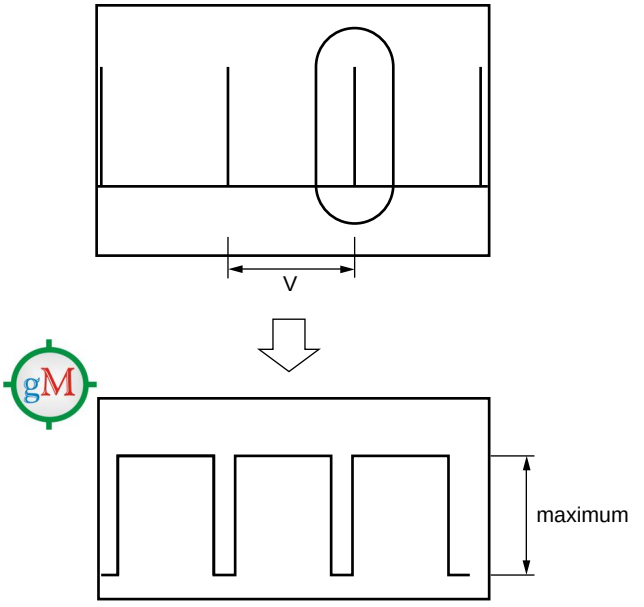
Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP10 (GND: E5)/DM-94 board
Adjusting point: ◓RV7 (Y CARR LEVEL)/DM-94 board
Specification: A = 400 ±20 mV p-p
(BW LIMIT/Oscilloscope → "OFF")

3-4-8. Y DEMOD Carrier Balance Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
- CLOSE button/MSU-700 → "ON"
- S3 (Y 2nd AGC)/DM-94 board → "OFF"

Test point: TP11 (GND: E3)/DM-94 board

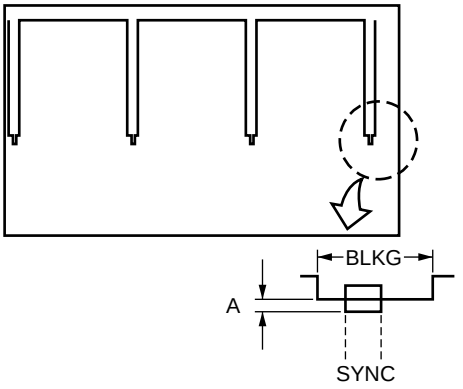
Adjustment Procedure
- Adjust ◓RV8 (Y CAR LEVEL)/DM-94 board so that the signal level of V sample pulse is maximum.



Note: After the adjustment, set as follows.
- S3 (Y 2nd AGC)/DM-94 board→ "ON"

3-4-9. Y OFFSET Adjustment

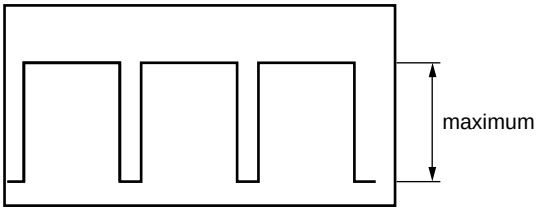
Rank: A
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP11 (GND: E3)/DM-94 board
Adjusting point: ◓RV24 (Y OFFSET ADJ)/DM-94 board
Specification: A = 0 ±3 mV



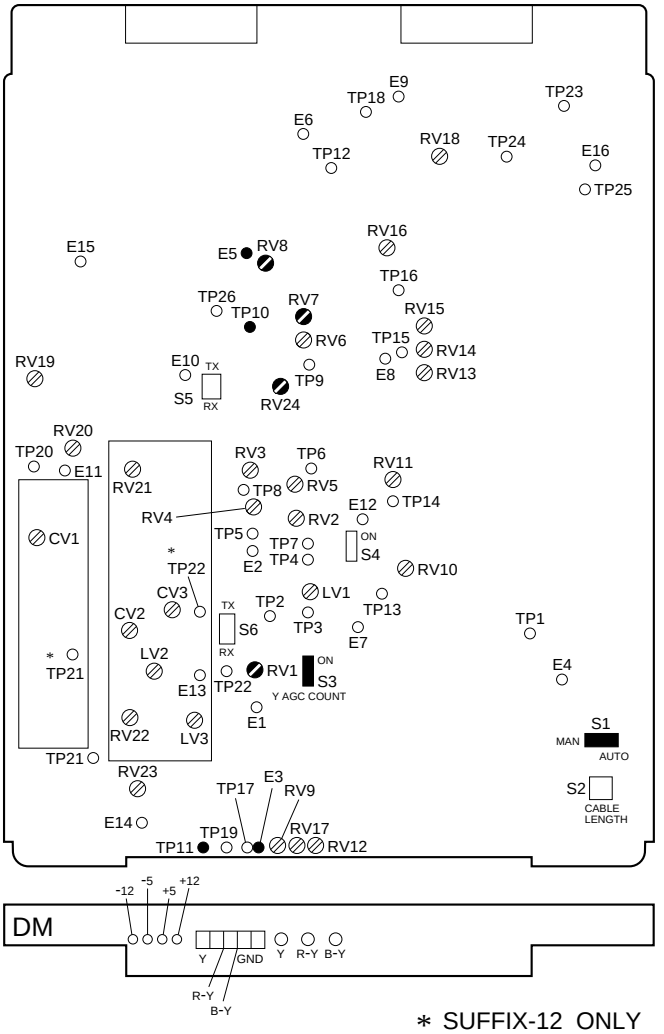
3-4-10. Y 1st AGC Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
- S1 (AUTO/MANU)/DM-94 board → "AUTO"
- S3 (Y 2nd AGC)/DM-94 board → "OFF"

Test point: TP11 (GND: E3)/DM-94 board
Adjusting point: ◓RV1 (Y AGC CONT)/DM-94 board
Specification: A = 700 ±20 mV



Note: After the adjustment, set as follows.
- S3 (Y 2nd AGC)/DM-94 board→ "ON"

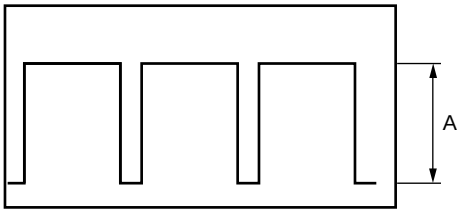


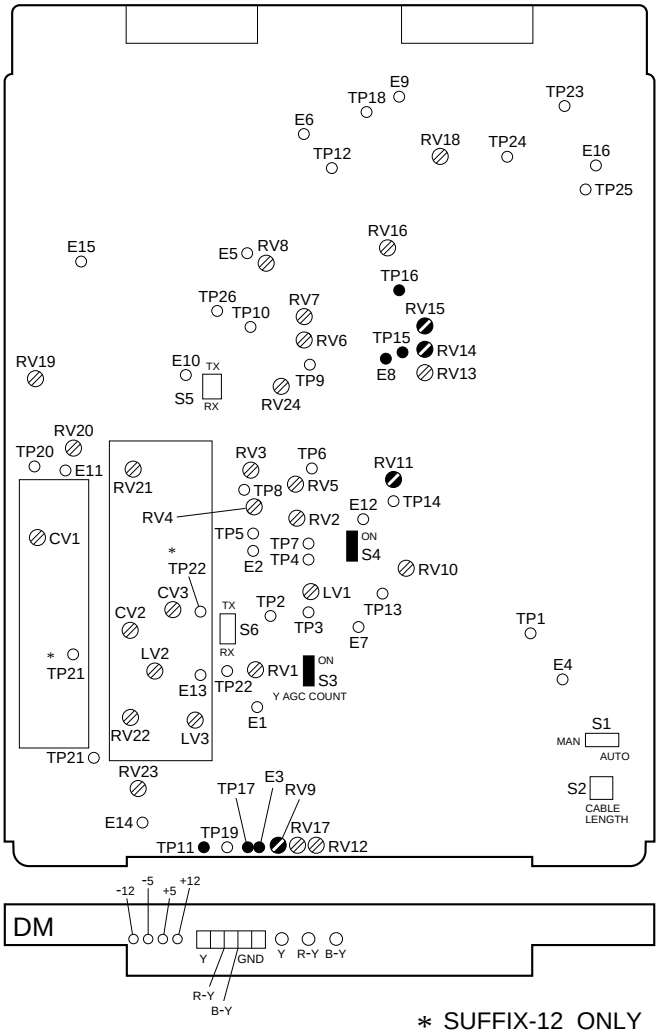
∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-4-11. Y Output Level Adjustment

Rank: A
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
• S3 (Y 2nd AGC)/DM-94 board → "ON"
Test point: TP11 (GND: E3)/DM-94 board
Adjusting point: ⊘RV9 (Y LEVEL)/DM-94 board
Specification: A = 707 ±7 mV p-p





∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-5. CHROMA Cable Compensation System Adjustment

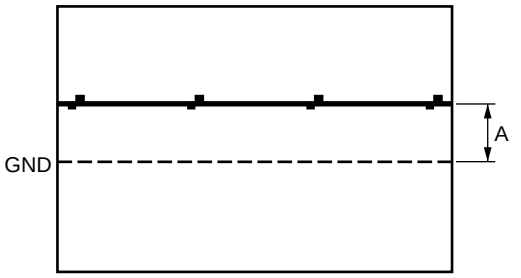
3-5-1. 45MHz Carrier Level Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP16 (GND: E8)/DM-94 board
Adjusting point: ⊘RV15 (C CARR LEVEL)/ DM-94 board
Specification: A = 400 ±20 mV p-p
(BW LIMIT/Oscilloscope → "OFF")

3-5-2. C PLL Set Adjustment

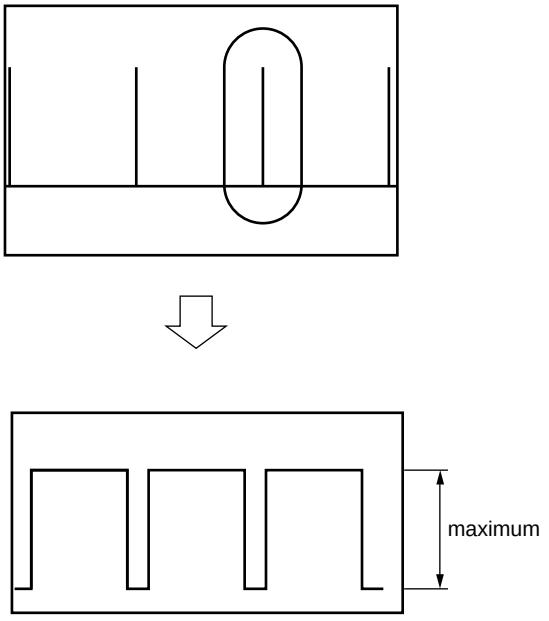
Rank: C
Note: Make sure that 45 MHz frequency on the MD board (camera) is correct.

Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP15 (GND: E8)/DM-94 board
Adjusting point: ⊘RV14 (PLL SET)/DM-94 board
Specification: A = 0 ±30 mV dc



3-5-3. B-Y DEMOD Carrier Balance Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
• S4 (C 2nd AGC)/DM-94 board → "OFF"
Test point: TP17 (GND: E3)/DM-94 board
Adjusting point: ⊘RV11 (B-Y CARR BAL)/ DM-94 board
Specification: Adjust so that the waveform level of SAMPLE pulse is maximum.

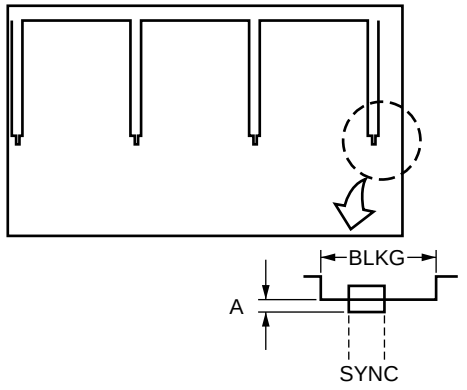


Note: After the adjustment, set as follows.
• S4 (C 2nd AGC)/DM-94 board→ "ON"

3-5-4. B-Y Crosstalk Adjustment

Rank: A
Note: Make sure that 45 MHz frequency on the MD board (camera) is correct.

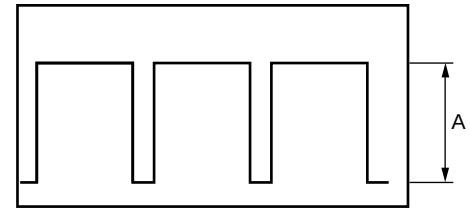
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP17 (GND: E3)/DM-94 board
Adjusting point: ⊘RV13 (OFFSET ADJ)/DM-94 board
Specification: A = 0 ±3 mV



3-5-5. C 1st AGC Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
- S1 (AUTO/MANU)/DM-94 board → "AUTO"
- S4 (C 2nd AGC)/DM-94 board → "OFF"

Test point: TP17 (GND: E3)/DM-94 board
Adjusting point: ⊘RV10 (C AGC CONT)/DM-94 board
Specification: A = 350 ±20 mV



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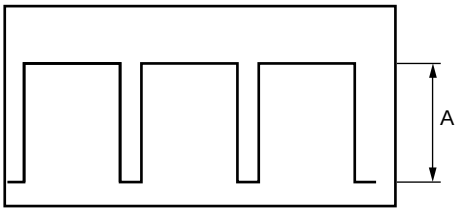
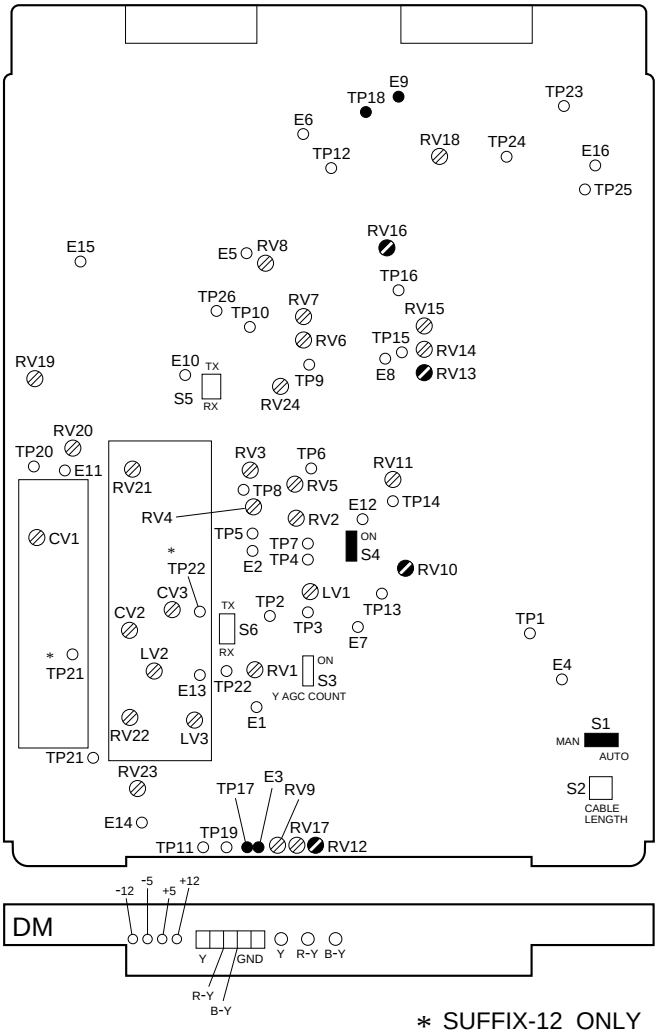
3-5-6. B-Y OUT Level Adjustment

Rank: A
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
• S4 (C 2nd AGC)/DM-94 board → "ON"
Test point: TP17 (GND: E3)/DM-94 board
Adjusting point: ⊘RV12 (B-Y LEVEL)/DM-94 board
Specification: A = 355 ±5 mV p-p



3-5-7. R-Y DEMOD Carrier Balance Adjustment

Rank: B
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP18 (GND: E9)/DM-94 board
Adjusting point: ⊘RV16 (R-Y CARR BAL)/ DM-94 board
Specification: Adjust ⊘RV16 so that the negative DC level is maximum.



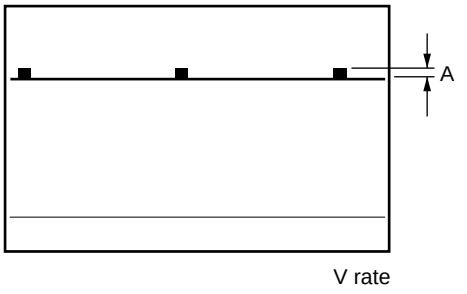
∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-5-8. R-Y Crosstalk Adjustment

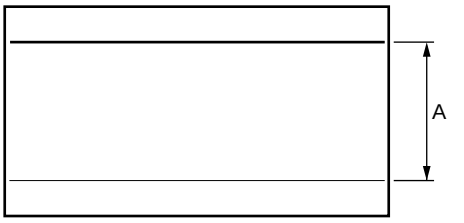
Rank: A
Note: Make sure that 45MHz frequency on the MD board (camera) is correct.

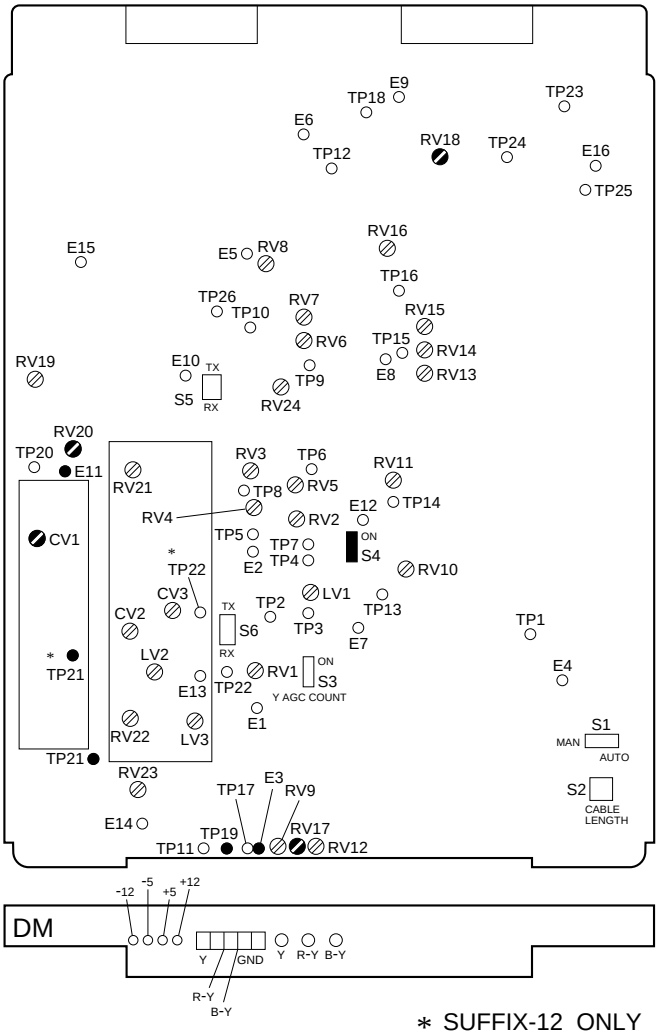
Equipment: Oscilloscope
To be extended: DM-94 board
Test point: TP19 (GND: E3)/DM-94 board
Adjusting point: ⊘RV18 (90 SET)/DM-94 board
Specification: Adjust ⊘RV18 so that the SAMPLE pulse level is minimum.
A = 0 ±3 mV



3-5-9. R-Y OUT Level Adjustment

Rank: A
Equipment: Oscilloscope
To be extended: DM-94 board
Preparation
• S4 (C 2nd AGC)/DM-94 board → "ON"
Test point: TP19 (GND: E3)/DM-94 board
Adjusting point: ⊘RV17 (R-Y LEVEL)/DM-94 board
Specification: A = 355 ±5 mV





∗ SUFFIX-12 ONLY

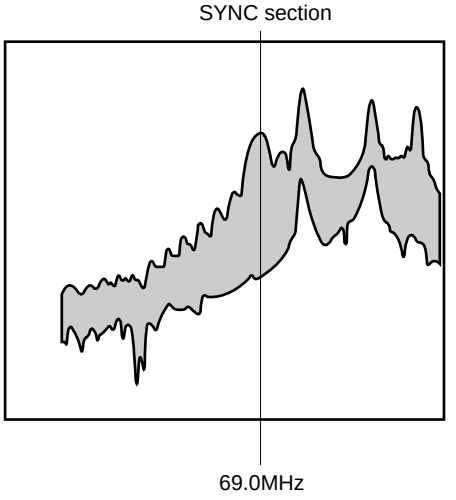
(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-6. RETURN VIDEO Cable Compensation System Adjustment

3-6-1. Return Video Carrier Frequency Adjustment

Rank: C
Equipment: Spectrum analyzer
To be extended: DM-94 board
Preparation
- BARS button/MSU-700 → "OFF"
- TEST 2 button/MSU-700 → "ON"
- Connect VBS 1 OUT connector and RET 1 IN connector on CCU-700A/700AP rear panel with BNC cable.

Test point: TP21 (GND: E11)/DM-94 board
Adjusting point: ⊘CV1 (RET FREQ)/DM-94 board
Specification: 69.000 ±0.005 MHz

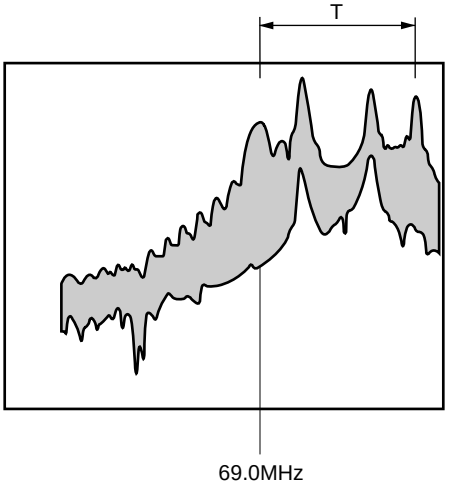


CENT FREQ: 69.0MHz
FFEQ SPAN: 5.0MHz

3-6-2. Return Video Deviation Adjustment

Rank: C
Equipment: Spectrum analyzer
To be extended: DM-94 board
Preparation
- BARS button/MSU-700 → "OFF"
- TEST 2 button/MSU-700 → "ON"
- Connect VBS 1 OUT connector and RET 1 IN connector on CCU-700A/700AP rear panel with BNC cable.

Test point: TP21 (GND: E11)/DM-94 board
Adjusting point: ⊘RV20 (RET DEV)/DM-94 board
Specification: T = 2.000 ±0.005 MHz

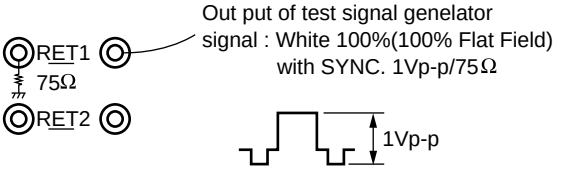


CENT FREQ: 69.0MHz
FFEQ SPAN: 5.0MHz

3-6-3. Return Video Mix Ratio Adjustment

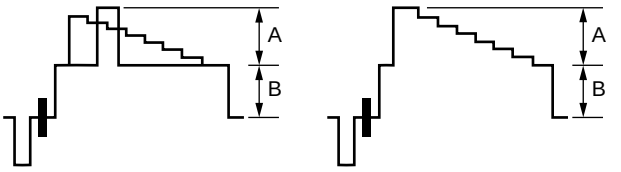
Rank: B
Equipment: Oscilloscope, Video signal generator
To be extended: DM-94 board
Preparation

- BARS button/MSU-700 → "ON"
- Make a connection of the CCU rear panel as shown.
- MIX VF switch/BVP-700/700P rear panel → "ON"

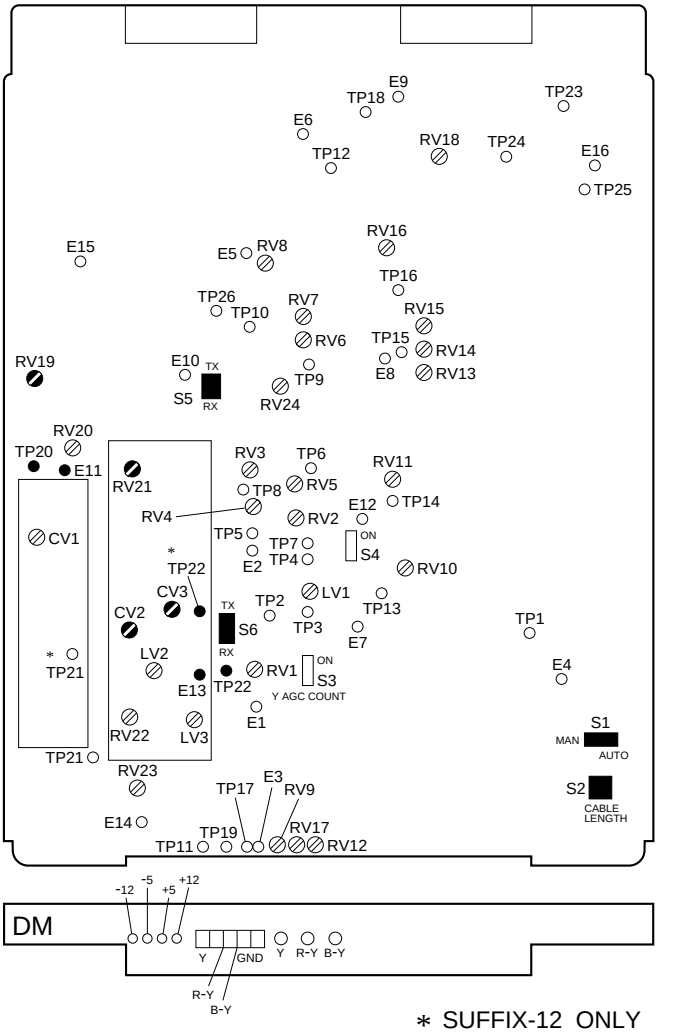


Test point: TP20 (GND: E11)/DM-94 board
Adjusting point: ◓RV19 (RET MIX)/DM-94 board
Specification: A = B ±20 mV p-p (at the factory)
(The ratio A:B can be variable the range from 0:100 to 75:25. Adjust according to the establishment condition of the customer side.)

[For NTSC] **[For PAL]**



Note: After adjustment, set the MIX VF switch/BVP rear panel to "OFF".



∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

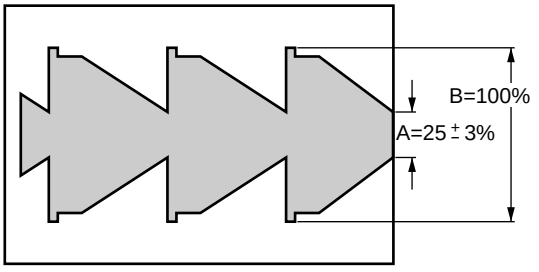
3-7. PROMPT VIDEO Cable Compensation System Adjustment

3-7-1. TX PROMPT VIDEO Demodulation Adjustment

Rank: B
Note: When adjusting this step, the length of triaxial cable is required less than 500 m.
Equipment: Oscilloscope, Video signal generator
To be extended: DM-94 board
Preparation

- S4 (CCU → CAM/CAM → CCU)/
  MD-83 board (BVP side) → "CCU → CAM"
- Connect the harness of MPX filter to CN35 (PROMPT) connector on DM-97 board (BVP side).
- Feed the 10 STEP signal from the video signal generator to PROMPTER connector (CCU rear panel).
- S5 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "TX"
- S6 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "TX"
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "MAN"
- S2 (CABLE LENGTH)/
  DM-94 board (CCU-700A/700AP) → "1"

Test point: Board suffix-12 only
Center pin of S6 switch (GND: E13)/DM-94 board
Board suffix-13 and higher
TP22 (GND: E13)/DM-94 board
Adjusting point: ⊘RV21 (PROMPT TX DEV)/ DM-94 board
Specification: A = 25 ±3 %



Adjustment Procedure

- Adjust ⊘RV21 so that the level "A" is 25 ±3% when the level "B" is 100% with using VAR control of the oscilloscope.

Note: After the adjustment, set as follows.

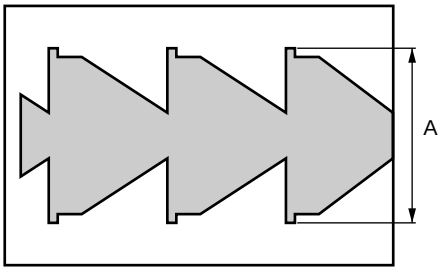
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "AUTO"
- S2 (CABLE LENGTH)/
  DM-94 board (CCU-700A/700AP) → "0"

3-7-2. TX PROMPT VIDEO BPF Adjustment

Rank: C
Note: Make sure that "3-7-1. TX PROMPT VIDEO Demodulation Adjustment" is done.
When adjusting this step, the length of triaxial cable is required less than 500 m.
Equipment: Oscilloscope, Video signal generator
To be extended: DM-94 board
Preparation

- S4 (CCU → CAM/CAM → CCU)/
  MD-83 board (BVP side) → "CCU → CAM"
- Connect the harness of MPX filter to CN35 (PROMPT) connector on DM-97 board (BVP side).
- Feed the 10 STEP signal from the video signal generator to PROMPTER connector (CCU rear panel).
- S5 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "TX"
- S6 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "TX"
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "MAN"
- S2 (CABLE LENGTH)/
  DM-94 board (CCU-700A/700AP) → "1"

Test point: Board suffix-12 only
Center pin of S6 switch (GND: E13)/DM-94 board
Board suffix-13 and higher
TP22 (GND: E13)/DM-94 board
Adjusting point: ⊘CV2 (PROMPT TX FREQ 1)/ DM-94 board
⊘CV3 (PROMPT TX FREQ 2)/ DM-94 board



Adjustment Procedure

- Adjust ⊘CV2 and ⊘CV3 alternately so that the level "A" is maximum.

Note: After the adjustment, set as follows.

- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "AUTO"
- S2 (CABLE LENGTH)/
  DM-94 board (CCU-700A/700AP) → "0"

3-7-3. RX PROMPT VIDEO Demod. Adjustment

Rank: C

Note: Perform the adjustment only when replacing ⊘LV2 (PROMPT RX FREQ) or ⊘LV3 (PROMPT RX TUNE)/DM-94 board.
When adjusting this step, the length of triaxial cable is required less than 500 m.
Adjustment of BVP-700/700P must be completed.

Equipment: Oscilloscope, Video signal generator (SWEEP, 10 STEP signal)

To be extended: DM-94 board

Preparation

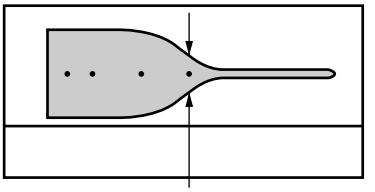
- S4 (CCU → CAM/CAM → CCU)/
  MD-83 board (BVP side) → "CAM → CCU"
- Remove the green harness of MPX filter from CN35 (PROMPT) connector on DM-97 board (BVP side). And connect its harness to CN27 (PROMPT REVERSE)/MB-430 board (BVP side).
- S5 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S6 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "AUTO"
- Feed the SWEEP signal from the video signal generator to PROMPTER connector (CCU rear panel).

Test point: pin D34 (GND: pin C34)/
extension board

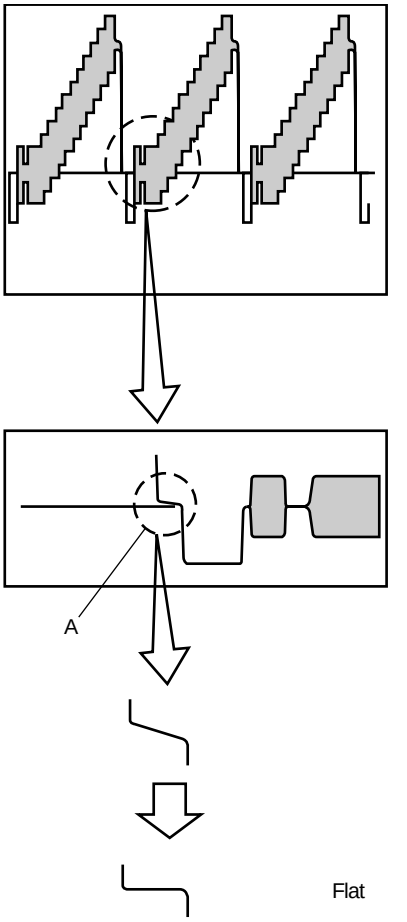
Adjusting point: ⊘LV2 (PROMPT FREQ)/
DM-94 board
⊘LV3 (PROMPT RX TUNE)/
DM-94 board

Adjustment Procedure

1. Observe the waveform monitor screen and adjust ⊘LV3 (PROMPT RX TUNE)/DM-94 board so that the video waveform is appeared.
2. Adjust ⊘LV2 (PROMPT FREQ)/DM-94 board so that the frequency response at 6 MHz portion is minimum.



3. Change the output signal of the video signal generator to 10 STEP signal.
4. Re-adjust ⊘LV3 (PROMPT TUNE)/DM-94 board so that the "A" portion at video waveform is flat. (**Note**:If not met, Re-perform "3-7-3. RX PROMPT VIDEO Demod. Adjustment" after performing "3-7-4. RX PROMPT VIDEO RF AGC Adjustment".)



Note: After the adjustment, set the switches as follows.

- S4 (CCU → CAM/CAM → CCU) switch/
  MD-83 board (BVP side) → "CCU → CAM"
- Return the green harness of MPX filter to CN35 (PROMPT) connector on DM-97 board (BVP side).
- S5 (TX← → RX) switch/DM-94 board → "TX"
- S6 (TX← → RX) switch/DM-94 board → "TX"
- Remove the BNC cable from the PROMPTER connector/CCU rear panel.

3-7-4. RX PROMPT VIDEO RF AGC Adjustment

Rank: B

Note: When adjusting this step, the length of triaxial cable is reguired 50 to 150 m. Adjustment of BVP-700/700P must be completed.

Equipment: Oscilloscope,
Video signal generator (10 STEP signal)

To be extended: DM-94 board

Preparation

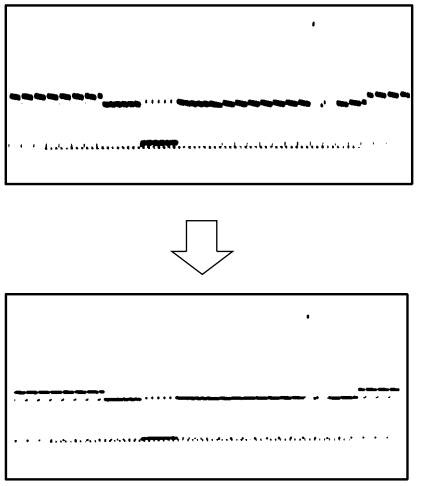
- S4 (CCU → CAM/CAM → CCU)/
  MD-83 board (BVP side) → "CAM → CCU"
- Remove the green harness of MPX filter from CN35 (PROMPT) connector on DM-97 board (BVP side). And connect its harness to CN27 (PROMPT REVERSE)/MB-430 board (BVP side).
- S5 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S6 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "MAN"
- S2 (CABLE LENGTH)/
  DM-94 board (CCU-700A/700AP) → "1"
- Feed the 10 STEP signal from the video signal generator to PROMPTER connector (camera side panel).

Test point: pin D34 (GND: pin C34)/
extension board

Adjusting point: ⊘RV22 (RF AGC DLY)/
DM-94 board

Adjustment Procedure

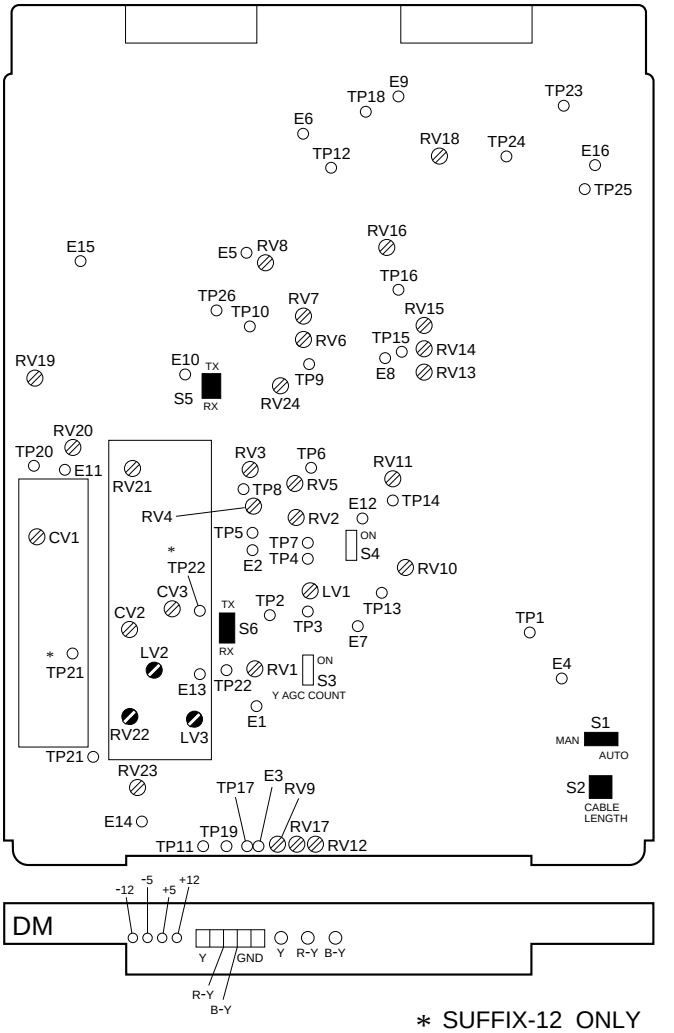
- Turn ⊘RV22 (RF AGC DLY)/DM-94 board counter-clockwise slowly from the right most position and stop where the V SYNC portion at waveform becomes flat. (Take care not to over-turn.)



V rate

Note: After the adjustment, set the switches as follows.

- S4 (CCU → CAM/CAM → CCU) switch/
  MD-83 board (BVP side) → "CCU → CAM"
- Return the green harness of MPX filter to CN35 (PROMPT) connector on DM-97 board (BVP side).
- S5 (TX← → RX) switch/DM-94 board → "TX"
- S6 (TX← → RX) switch/DM-94 board → "TX"
- S1 (MODE AUTO/MAN) switch/
  DM-94 board → "AUTO"
- S2 (CABLE LENGTH) switch/DM-94 board → "0"
- Remove the BNC cable from the PROMPTER connector/CCU rear panel.



∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-7-5. RX PROMPT VIDEO Level Adjustment

Rank: B

Note: When adjusting this step, the length of triaxial cable is required less than 500 m. Adjustment of BVP-700/700P must be completed.

Equipment: Oscilloscope,
Video signal generator (10 STEP signal)

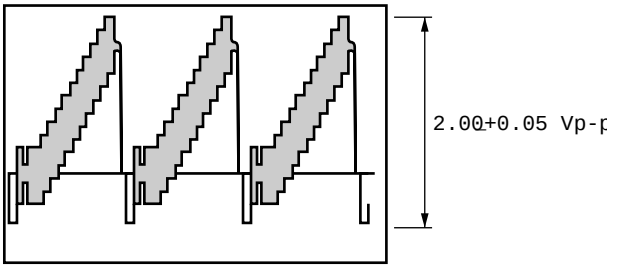
To be extended: DM-94 board

Preparation

- S4 (CCU → CAM/CAM → CCU)/
  MD-83 board (BVP side) → "CAM → CCU"
- Remove the green harness of MPX filter from CN35 (PROMPT) connector on DM-97 board (BVP side). And connect its harness to CN27 (PROMPT REVERSE)/MB-430 board (BVP side).
- S5 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S6 (TX← → RX)/
  DM-94 board (CCU-700A/700AP) → "RX"
- S1 (MODE AUTO/MAN)/
  DM-94 board (CCU-700A/700AP) → "AUTO"
- PROMPT OUT/rear panel → Disconnect 75 Ω termination
- Feed the 10 STEP signal from the video signal generator to PROMPTER connector (camera side panel).

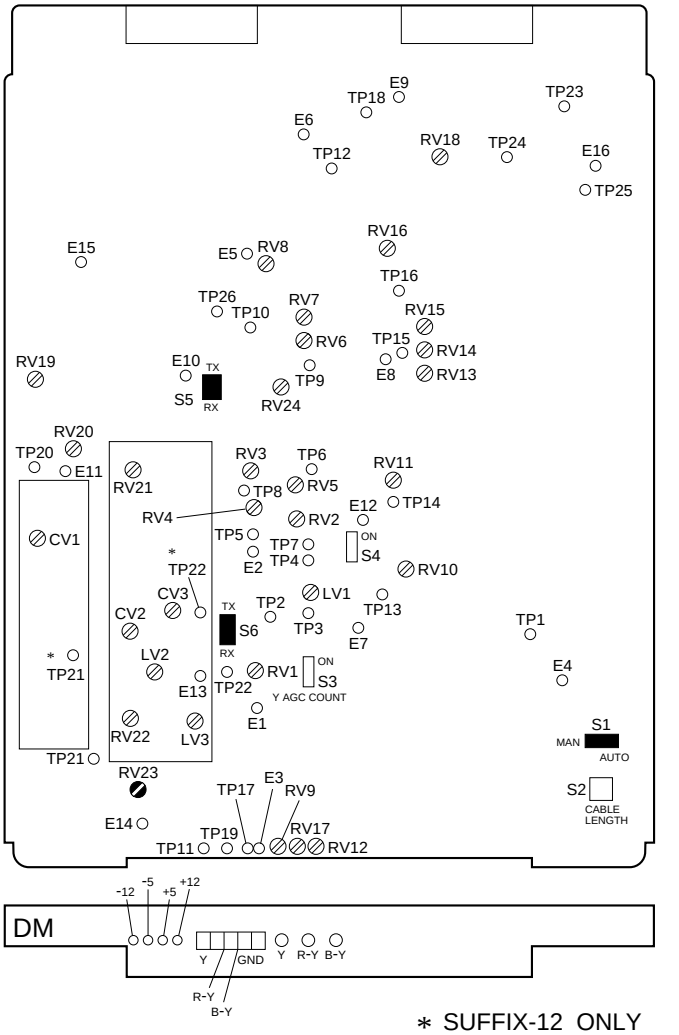
Adjustment Procedure

- Adjust ⊘RV23 (PROMPT LEVEL)/DM-94 board so that the video level at pin D34 (GND: pin C34)/extension board is 2.00 ±0.05 V p-p.



Note: After the adjustment, set the switches as follows.

- S4 (CCU → CAM/CAM → CCU) switch/
  MD-83 board (BVP side) → "CCU → CAM"
- Return the green harness of MPX filter to CN35 (PROMPT) connector on DM-97 board (BVP side).
- S5 (TX← → RX) switch/DM-94 board → "TX"
- S6 (TX← → RX) switch/DM-94 board → "TX"
- Remove the BNC cable from the PROMPTER connector/CCU rear panel.



∗ SUFFIX-12 ONLY

(PANEL SIDE) DM-94 BOARD (COMPONENT SIDE)

3-8. TRIAX Interface System Adjustment

3-8-1. Frequency Set Adjustment

Rank: C

Note: Check to see that the signals are not input to the INCOM connector and PGM connector of the CCU-700A/700AP rear panel or the intercom double jack on the front panel. Parform the adjustment only when replacing the following part.
⊘LV1, 21, 41, 61, 81,
D2, 22, 42, 62, 82

Equipment: Frequency counter, DC power supply, Digital voltmeter

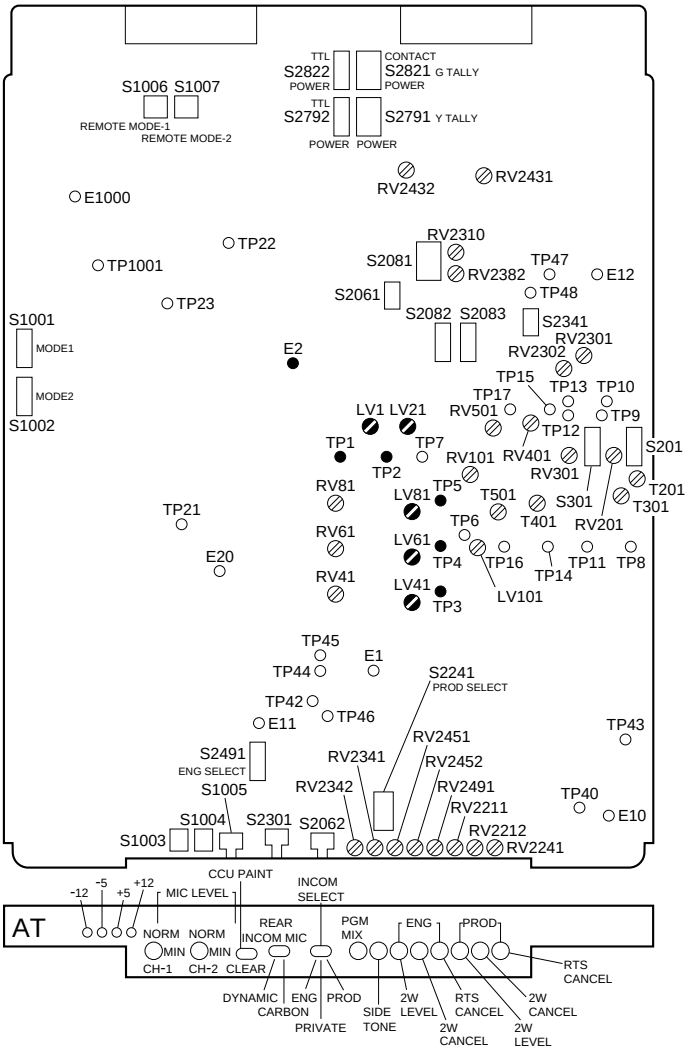
To be extended: AT-88 board

Adjustment Procedure

AT-88 board (GND: E2)

	Test point	Adj. point	Specifications
PGM	TP5	⊘LV81	4.300 ±0.005 MHz
INCOM 1	TP3	⊘LV81	3.600 ±0.005 MHz
INCOM 2	TP4	⊘LV61	3.900 ±0.005 MHz
H CONT	TP1	⊘LV1	2.500 ±0.005 MHz *
CCU DATA	TP2	⊘LV21	3.000 ±0.005 MHz

* When carrying out H CONT Frequency Set Adjustment, supply the DC voltage of +2.5 ±0.05 V to the pin C19/extension board.



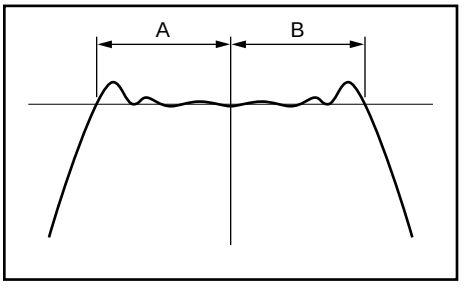
(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

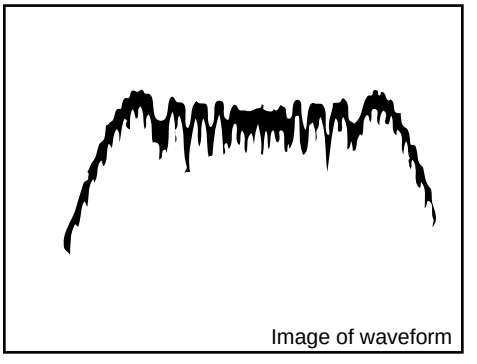
3-8-2. INCOM 1 Deviation Adjustment

Rank: C
Equipment: Spectrum analyzer, Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
• INCOM 1 (PROD/ENG) switch/ BVP rear panel → "ENG"
Test point: TP3 (GND: E1)/AT-88 board
Adjusting point: ⊘RV41 (INCOM 1 DEV)/AT-88 board
Specification: A = B = 6.0 ±0.4 kHz

Adjustment Procedure

1. (For 4W intercom system)
   Feed the 400Hz sine-wave to pin A71 (X), pin B71 (Y) and pin C71 (GND)/extension board (AT-88).
   …Fig-2 (Refer to 3-1-4. Audio connection.)
   (For 2W intercom system)
   Feed the 400Hz sine-wave to pin A71 (X), pin C71 (GND)/extension board.
   …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust the output of audio generator so that the level at TP46 (GND: E1) on the AT-88 board is 200 mV p-p.
3. Connect the probe of the spectrum analyzer to TP3 (GND: E1) on the AT-88 board.
   Adjust ⊘RV41 (INCOM 1 DEV) on the AT-88 board so that the A and B are 6.0 ±0.4 kHz.





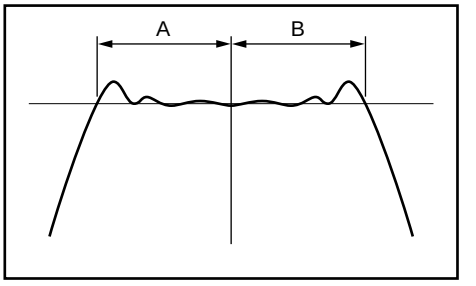
CENT FREQ : 3.9MHz
FREQ SPAN : 20MHz

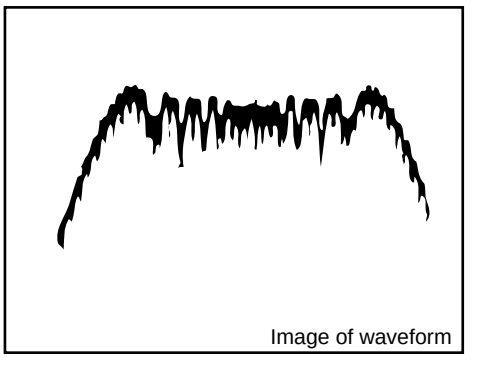
3-8-3. INCOM 2 Deviation Adjustment

Rank: C
Equipment: Spectrum analyzer, Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
• INCOM 2 (PROD/ENG) switch/ BVP rear panel → "ENG"
Test point: TP4 (GND: E1)/AT-88 board
Adjusting point: ⊘RV61 (INCOM 2 DEV)/AT-88 board
Specification: A = B = 6.0 ±0.4 kHz

Adjustment Procedure

1. (For 4W intercom system)
   Feed the 400Hz sine-wave to pin C69 (X), pin D69 (Y) and pin A70 (GND)/extension board (AT-88).
   …Fig-2 (Refer to 3-1-4. Audio connection.)
   (For 2W intercom system)
   Feed the 400Hz sine-wave to pin C69 (X), pin A70 (GND)/extension board (AT-88).
   …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust the output of audio generator so that the level at TP43 (GND: E10) on the AT-88 board is 200 mV p-p.
3. Connect the probe of the spectrum analyzer to TP4 (GND: E1) on the AT-88 board.
   Adjust ⊘RV61 (INCOM 2 DEV) on the AT-88 board so that the A and B are 6.0 ±0.4 kHz.





CENT FREQ : 3.9MHz
FREQ SPAN : 20MHz

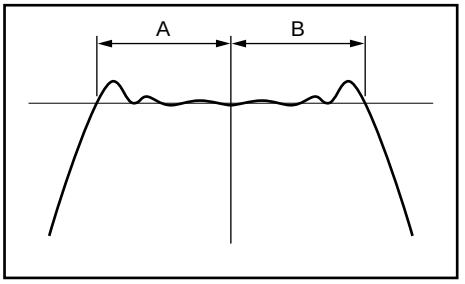
http://getMANUAL.com

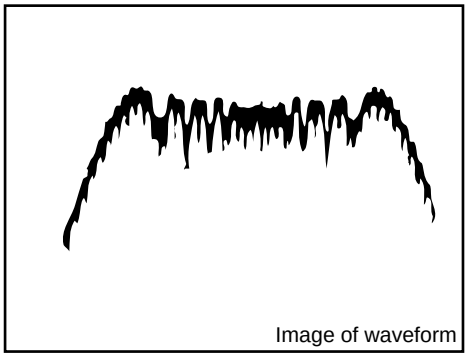
3-8-4. PGM Deviation Adjustment

Rank: C
Equipment: Spectrum analyzer, Oscilloscope, Audio generator
To be extended: AT-88 board
Test point: TP5 (GND: E2)/AT-88 board
Adjusting point: ⊘RV81 (PGM DEV)/AT-88 board
Specification: A = B = 7.0 ±0.4 kHz

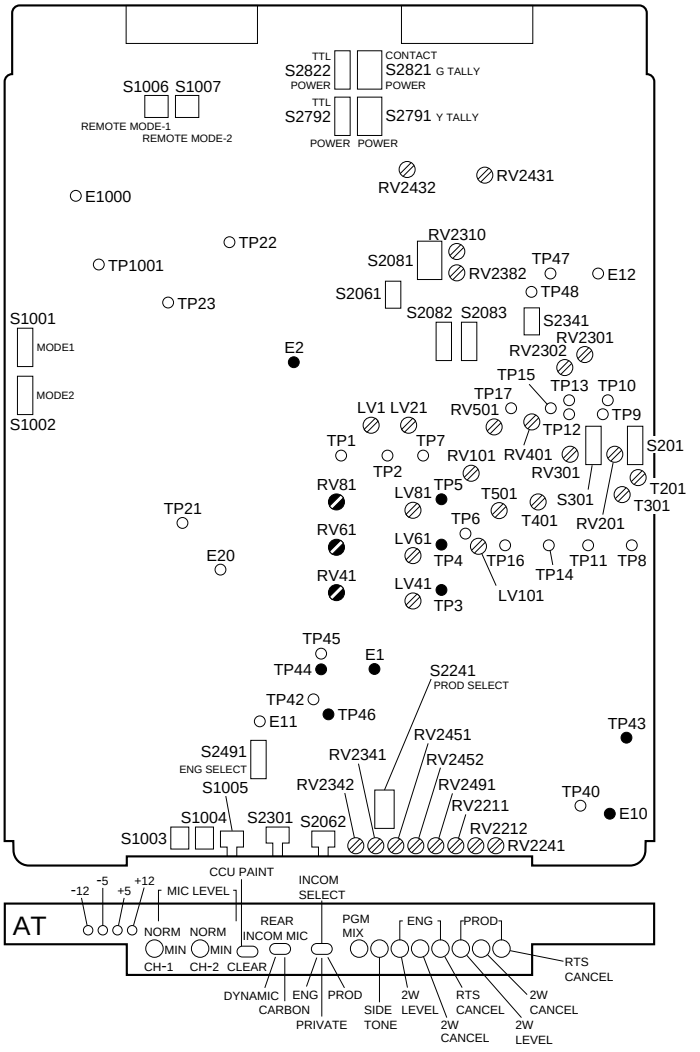
Adjustment Procedure

1. Feed the 1 kHz sine-wave to pin D68 (X), pin A69 (Y) and pin B69 (GND)/extension board (AT-88).
   …Fig-2 (Refer to 3-1-4. Audio connection.)
2. Adjust the output of audio generator so that the level at TP44 (GND: E1) on the AT-88 board is 200 mV p-p.
3. Connect the probe of the spectrum analyzer to TP5 (GND: E2) on the AT-88 board.
   Adjust ⊘RV81 (PGM DEV) on the AT-88 board so that the A and B are 7.0 ±0.4 kHz.





CENT FREQ : 4.3MHz
FREQ SPAN : 20MHz



(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

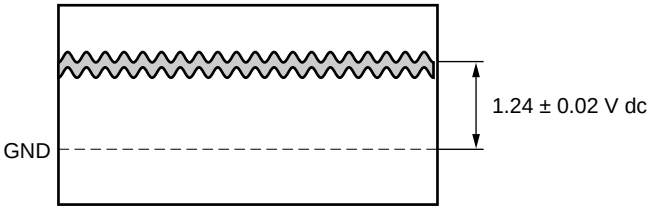
3-8-5. INCOM 1 Demod. Adjustment

Rank: C
Note: Perform the adjustment only when replacing ⊘T401/AT-88 board.

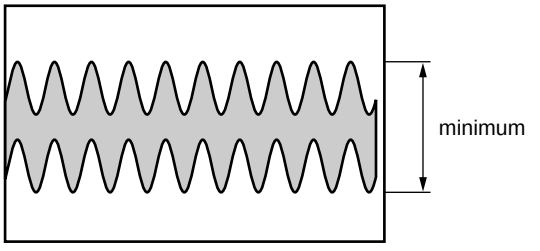
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC 1 (ON/OFF) switch/BVP rear panel → "ON"
- Extend the AU-177 board (BVP camera) with extension board EX-439.

Test point: TP14 (GND: E1)/AT-88 board

Adjustment Procedure
1. Feed the 1kHz, 220mVp-p sine-wave to pin 54 (X) and pin 55 (GND)/extension board (BVP camera). …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust a white core of ⊘T401/AT-88 board slowly so that the DC level at TP14 (GND: E1) is 1.24 ±0.02 V dc.



3. Set the input range of oscilloscope to AC mode, and adjust a blue core of ⊘T401/AT-88 board so that the sine-wave is minimum.
4. Repeat procedure 2.

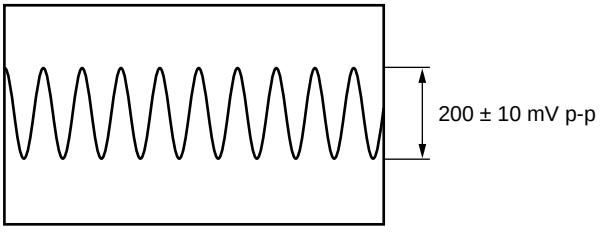


3-8-6. INCOM 1 Level Adjustment

Rank: B
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC 1 (ON/OFF) switch/BVP rear panel → "ON"
- Extend the AU-177 board (BVP camera) with extension board EX-439.

Test point: TP15 (GND: E12)/AT-88 board
Adjusting point: ⊘RV401 (INCOM 1 LEVEL)/ AT-88 board

Adjustment Procedure
1. Feed the 1kHz, /220mVp-p sine-wave to pin 54 (X) and pin 55 (GND)/extension board (BVP camera). …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV401 (INCOM 1 LEVEL) on the AT-88 board so that the signal level at TP15 (GND: E12) on the AT-88 board is 200 ±10 mV p-p.



3-8-7. INCOM 2 Demod. Adjustment

Rank: C
Note: Perform the adjustment only when replacing ⊘T501/AT-88 board.

Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board

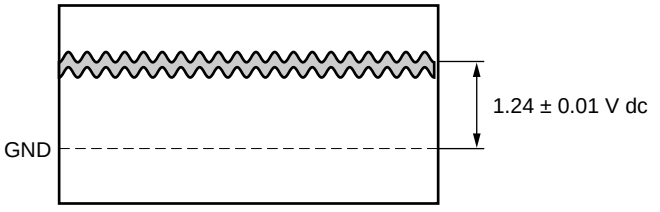
Preparation

- MIC 2 (ON/OFF) switch/BVP rear panel → "ON"
- Extend the AU-177 board (BVP camera) with extension board EX-439.

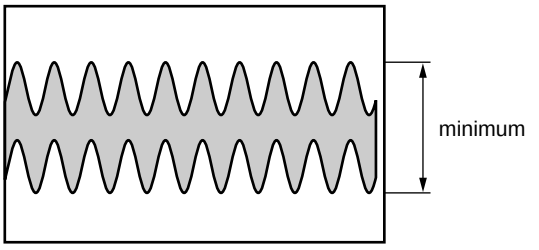
Test point: TP16 (GND: E1)/AT-88 board

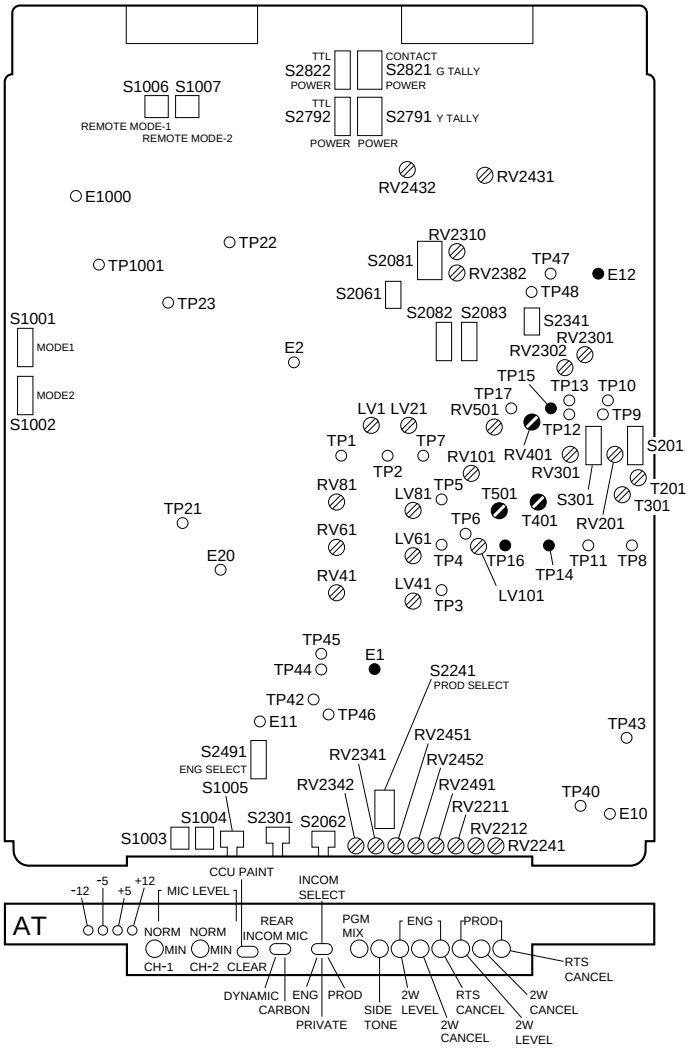
Adjustment Procedure

1. Feed the 1 kHz, 220 mV p-p sine-wave to pin 48 (X) and pin 49 (GND)/extension board (BVP camera). …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust a white core of ⊘T501/AT-88 board slowly so that the DC level at TP16 is 1.24 ±0.02 V dc.



3. Set the input range of oscilloscope to AC mode, and adjust a blue core of ⊘T501/AT-88 board so that the sine-wave is minimum.
4. Repeat procedure 2.





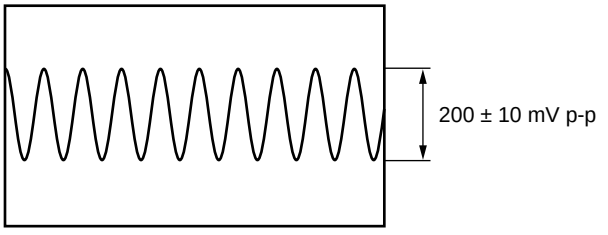
(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

3-8-8. INCOM 2 Level Adjustment

Rank: B
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC 2 (ON/OFF) switch/BVP rear panel → "ON"
- Extend the AU-177 board (BVP camera) with extension board EX-439.

Test point: TP17 (GND: E2)/AT-88 board
Adjusting point: ⊘RV501 (INCOM 2 LEVEL)/ AT-88 board

Adjustment Procedure
1. Input the 1 kHz, 220 mV p-p sine-wave to pin 48 (X) and pin 49 (GND)/extension board (BVP camera). …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV501 (INCOM 2 LEVEL) on the AT-88 board so that the signal level at TP17 (GND: E2) on the AT-88 board is 200 ±10 mV p-p.

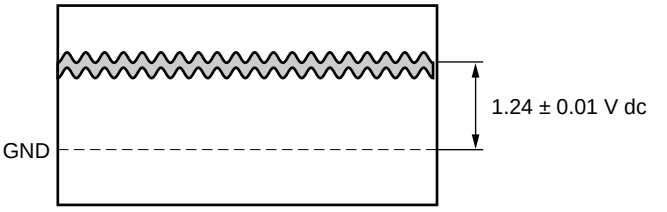


3-8-9. MIC 1 Demod. Adjustment

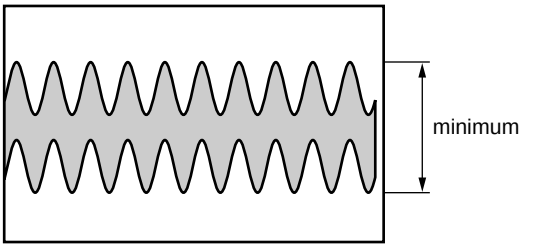
Rank: C
Note: Perform the adjustment only when replacing ⊘T201/AT-88 board.
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- Extend the AU-177 board (BVP camera) with extension board EX-439.
- S1003 (MIC 1 GAIN) switch/AT-88 board → "MIN"

Test point: TP8 (GND: E10)/AT-88 board

Adjustment Procedure
1. Feed the 1kHz, 270 mV p-p sine-wave to pin 66 (X), pin 65 (Y) and pin 67 (GND)/extension board (BVP camera). …Fig-3 (Refer to 3-1-4. Audio connection.)
2. Adjust a white core of ⊘T201/AT-88 board slowly so that the DC level at TP8 (GND: E10) is 1.24 ±0.01 V dc.



3. Set the input range of oscilloscope to AC mode, and adjust a blue core of ⊘T201/AT-88 board so that the sine-wave is minimum.
4. Repeat procedure 2.



3-8-10. MIC 1 Level Adjustment

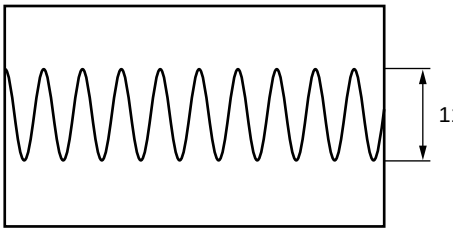
Rank: B
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation

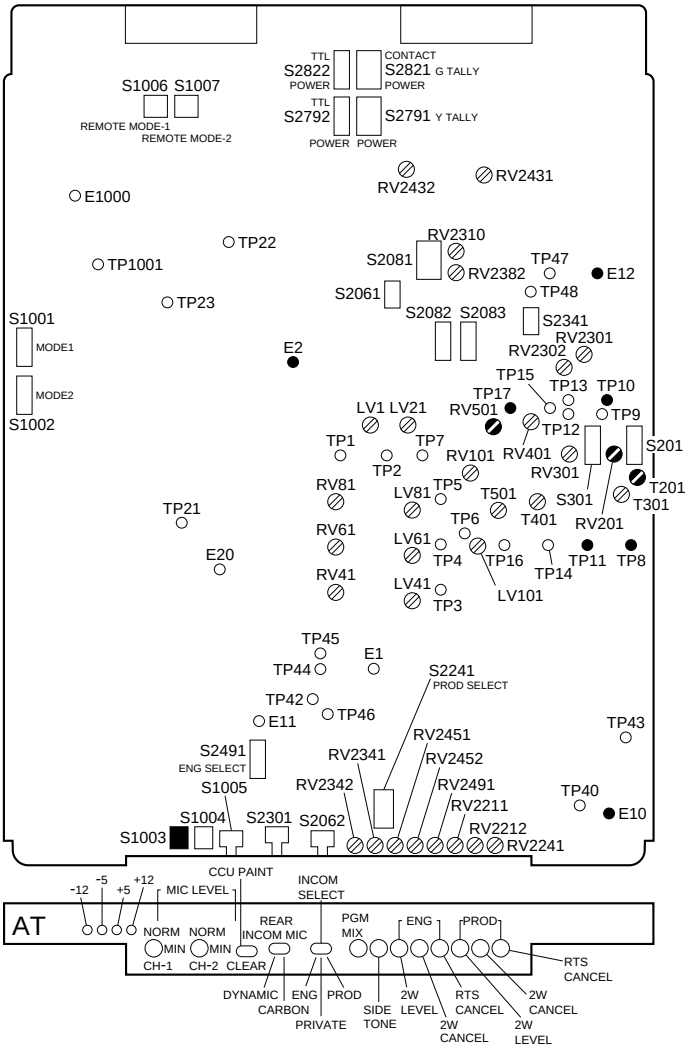
- Extend the AU-177 board (BVP camera) with extension board EX-439.
- S1003 (MIC 1 GAIN) switch/AT-88 board → "MIN"

Test point: TP10 (GND: E12)/AT-88 board
Adjusting point: ⊘RV201 (MIC 1 LEVEL)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz, 270 mV p-p sine-wave to pin 66 (X), pin 65 (Y) and pin 67 (GND)/extension board (BVP camera).
   …Fig-3 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV201 (MIC 1 LEVEL) on the AT-88 board so that the signal level at TP10 (GND: E12) on the AT-88 board is 1100 ±50 mV p-p.





(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

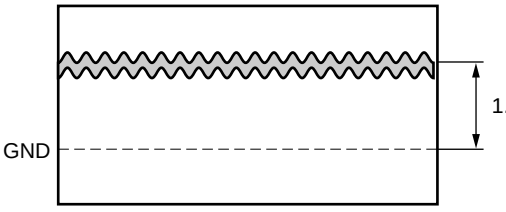
3-8-11. MIC 2 Demod. Adjustment

Rank: C
Note: Perform the adjustment only when replacing ⊘T301/AT-88 board.

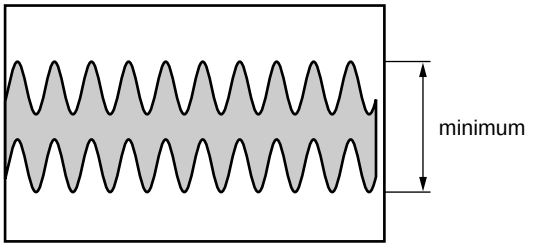
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- Extend the AU-177 board (BVP camera) with extension board EX-439.
- S1004 (MIC 2 GAIN) switch/AT-88 board → "MIN"

Test point: TP11 (GND: E10)/AT-88 board

Adjustment Procedure
1. Feed the 1 kHz, 220 mV p-p sine-wave to pin 60 (X), pin 59 (Y) and pin 61 (GND)/extension board (BVP camera).
   …Fig-2 (Refer to 3-1-4. Audio connection.)
2. Adjust a white core of ⊘T301/AT-88 board slowly so that the DC level at TP11 (GND: E10) is 1.24 ±0.01 V dc.



3. Set the input range of oscilloscope to AC mode, and adjust a blue core of ⊘T301/AT-88 board so that the sine-wave is minimum.
4. Repeat procedure 2.

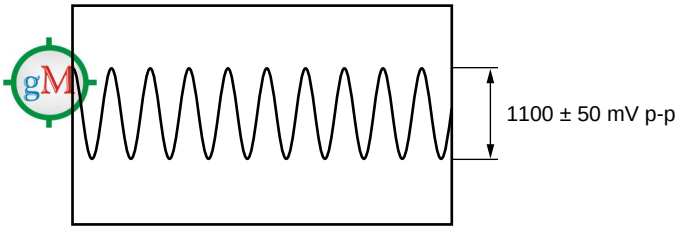


3-8-12. MIC 2 Level Adjustment

Rank: B
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- Extend the AU-177 board (BVP camera) with extension board EX-439.
- S1004 (MIC 2 GAIN) switch/AT-88 board → "MIN"

Test point: TP13 (GND: E12)/AT-88 board
Adjusting point: ⊘RV301 (MIC 2 LEVEL)/ AT-88 board

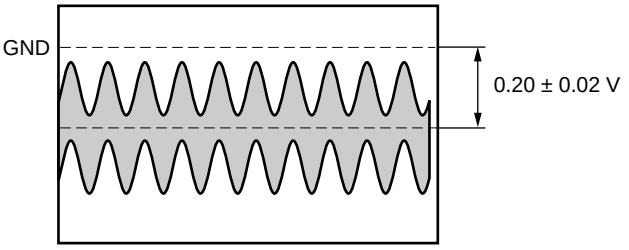
Adjustment Procedure
1. Feed the 1 kHz, 220 mV p-p sine-wave to pin 60 (X), pin 59 (Y) and pin 61 (GND)/extension board (BVP camera).
   …Fig-3 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV301 (MIC 2 LEVEL) on the AT-88 board so that the signal level at TP13 (GND: E12) on the AT-88 board is 1100 ±50 mV p-p.

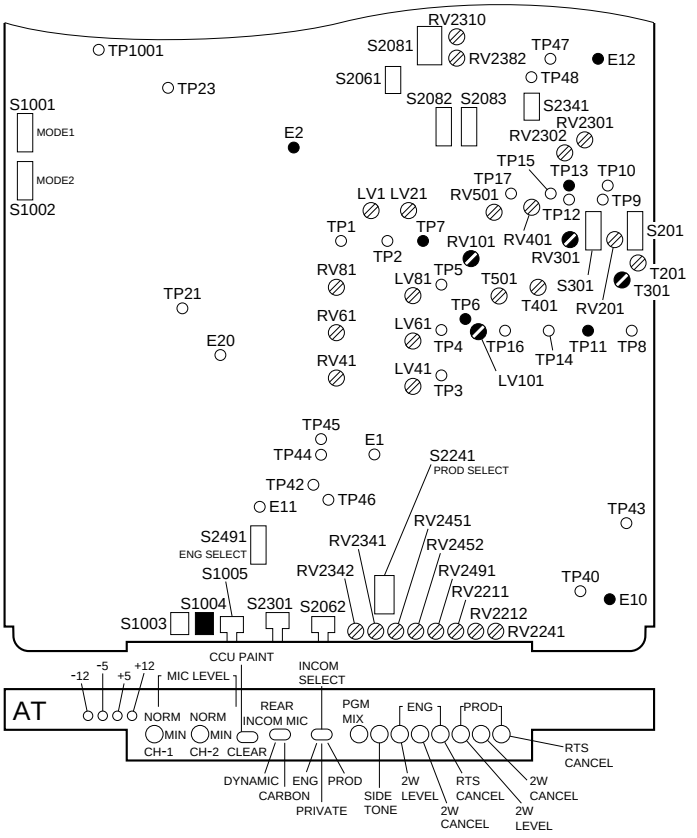


3-8-13. CHU DATA Demod. Adjustment

Rank: C
Note: The adjustment for BVP-700/700P camera must be completed.
Perform the adjustment only when replacing ⊘LV101 (5.6 MHz TUNE)/ AT-88 board.

Equipment: Oscilloscope
To be extended: AT-88 board
Test point: TP6 (GND: E2)/AT-88 board
Adjusting point: ⊘LV101 (5.6 MHz TUNE)/ AT-88 board
Specification: –0.20 ±0.02 V dc





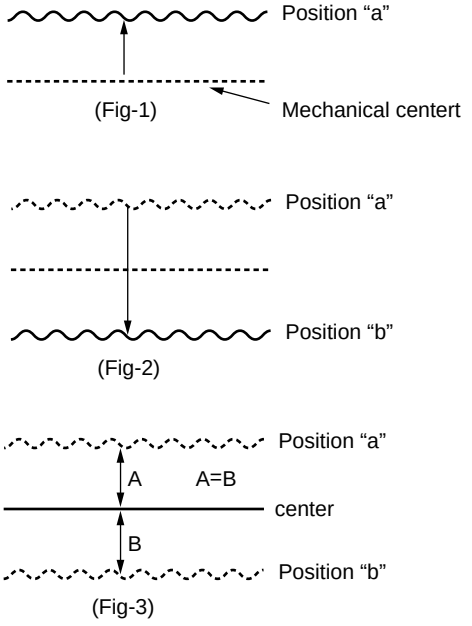
(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

3-8-14. CHU TONE Adjustment

Rank: C
Equipment: Oscilloscope (DC mode)
To be extended: AT-88 board
Test point: TP7 (GND: E2)/AT-88 board
Adjusting point: ⊘RV101 (TONE TUNE)/ AT-88 board

Adjustment procedure

1. ⊘RV101 (TONE TUNE)/ AT-88 board → Mechanical center
2. Turn ⊘RV101 (TONE TUNE)/AT-88 board slowly clockwise ↻ until the sine-wave waveform just appears.
   Measure the DC voltage “a”....Fig-1
3. Turn ⊘RV101 (TONE TUNE)/AT-88 board slowly counterclockwise ↺ until the sine-wave waveform just appears.
   Measure the DC voltage “b”....Fig-2
4. Adjust ⊘RV101 (TONE TUNE)/AT-88 board so that DC level is half way between position “a” and “b”....Fig-3



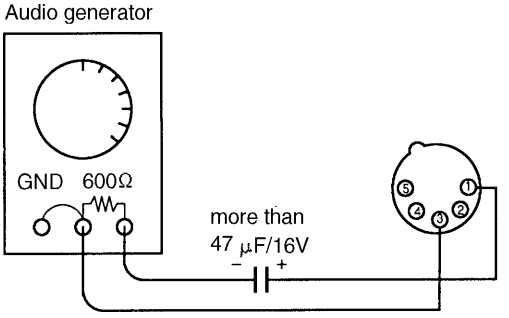
3-9. Intercom System Adjustment

3-9-1. INCOM (T) Level Set

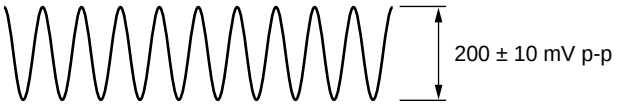
Rank: C
Equipment: Oscilloscope, Audio generator
Preparation
• MIC switch/CCU front panel → "CARBON"
Test point: TP45 (GND: E11)/AU-130 board
Adjusting point: ⊘RV2301 (FRONT MIC GAIN)/ AT-88 board

Adjustment procedure

1. Connect audio generator and INCOM connector (CCU-700A/700AP) as follows.



2. Feed the 1 kHz, 220 mV p-p sine-wave from Audio generator.
3. Adjust ⊘RV2301 (FRONT MIC GAIN)/AT-88 board so that the video level at TP45 is 200 ±10 mV p-p.

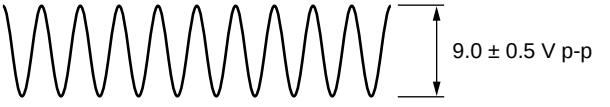


3-9-2. INCOM (R) Level Set

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
• INCOM (PROD/PRIV/ENG) switch/CCU front panel → "PROD"
• INCOM control/CCU front panel → Fully clockwise ↻
Test point: Pin A67 (GND: pin D66)/ extension board
Adjusting point: ⊘RV2310 (INCOM FP LEVEL)/ AT-88 board

Adjustment Procedure

1. (For 4W intercom system)
   Feed the 1 kHz sine-wave to pin C69 (X), pin D69 (Y) and pin A70 (GND)/extension board.
   …Fig-2 (Refer to 3-1-4. Audio connection.)
   (For 2W/RTS intercom system)
   Feed the 1kHz sine-wave to pin B70 (X), pin D70 (GND)/extension board.
   ...Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust the output of audio generator so that the level at TP43 (GND: E1) on the AT-88 board is 200 mV p-p.
3. ⊘RV2310 (INCOM FP LEVEL)/AT-88 board → fully clockwise ↻.
4. Confirm that the signal level at pin A67/extension board is 9.0 ±0.5 V p-p.

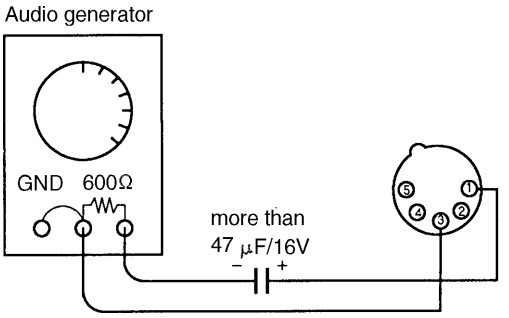


3-9-3. SIDE TONE Adjustment

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
• MIC switch/CCU front panel → "CARBON"
Test point: TP48 (GND: E12)/AT-88 board

Adjustment Procedure

1. Connect audio generator and INCOM connector/CCU front panel as follows.



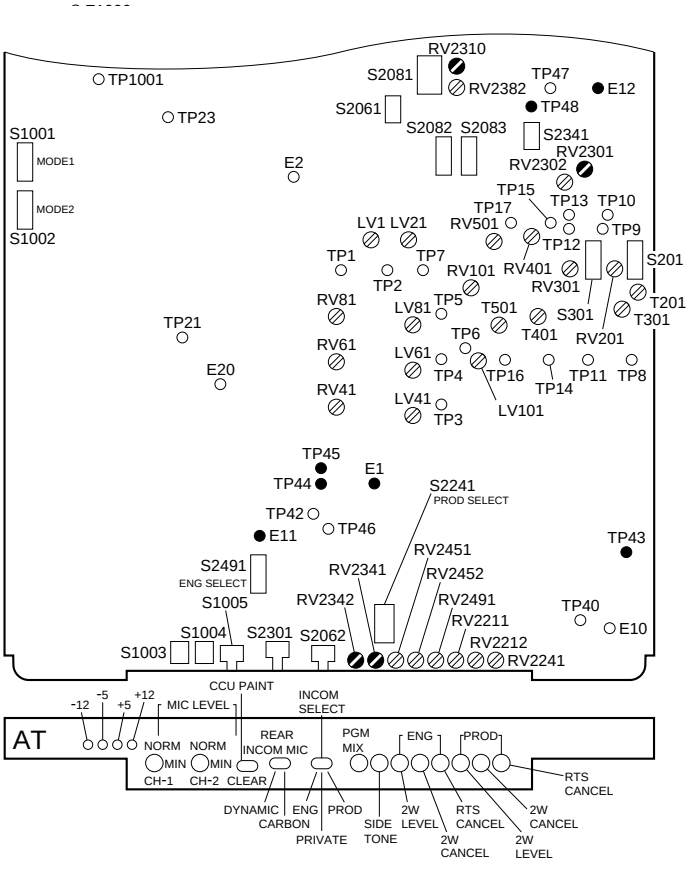
2. Adjust the level control of audio generator so that the audio level of 1 kHz sine-wave at TP45 (GND: E1)/ AT-88 board is 200 mV p-p.
3. When turning ⊘RV2341 (SIDE TONE)/AT-88 board fully clockwise ↻, check the output level at TP48 (GND: E12)/AT-88 board is 100 ±10 mV p-p.
4. Readjust ⊘RV2341 (SIDE TONE)/AT-88 board so that the level at the same test point is 50 ±5 mV p-p.
   Notes, this specification is for guidance when maintenance.
   Therefore, when intercom system is practically used, adjust ⊘RV2341 (SIDE TONE)/AT-88 board to the preferred level.

3-9-4. PGM MIX Adjustment

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Test point: TP48 (GND: E12)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz sine-wave to pin D68 (X), pin A69 (Y) and pin B69 (GND)/extension board (AT-88).
   …Fig-2 (Refer to 3-1-4. Audio connection.)
2. Adjust the output of audio generator so that the level at TP44 (GND: E1) on the AT-88 board is 200 mV p-p.
3. When turning ⊘RV2342 (PGM MIX)/AT-88 board fully clockwise ↻, check the output level at TP48 (GND: E12)/AT-88 board is 200 ±20 mV p-p.
4. Readjust ⊘RV2342 (PGM MIX)/AT-88 board so that the level at the same test point is 100 ±10 mV p-p.
   Notes, this specification is for guidance when maintenance.
   Therefore, when intercom system is practically used, adjust ⊘RV2342 (PGM MIX)/AT-88 board to the preferred level.



(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

3-10. 2W Intercom System Adjustment

3-10-1. ENG Level Adjustment

Note

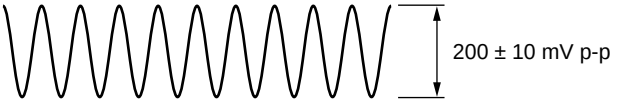
- Perform the following adjustment to much the input level of the camera system.

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- S2491 (INCOM 1 SELECT)/AT-88 board → "2W"

Test point: TP46 (GND: E11)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz, 1 V p-p sine-wave to pin D71 (X) and pin B72 (GND)/extension board.
   …Fig-1 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV2451 (ENG 2W LEVEL)/AT-88 board so that the audio level at TP46 (GND: E11)/AT-88 board is 200 ±10 mV.



3-10-2. ENG CANCEL Adjustment

Note

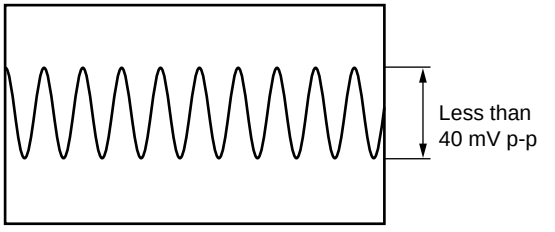
- Perform the following adjustment to much the input level of the camera system.

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC switch/CCU front panel → "CARBON"
- INCOM (PROD/PRIV/ENG) switch/ AT-88 board panel → "ENG"
- S2491 (INCOM 1 SELECT)/AT-88 board → "2W"
- Connect between pin D71 and pin B72/extension board with 600 Ω resistor.

Test point: TP46 (GND: E11)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz, 200 mV p-p sine-wave to INCOM connector (CCU-700A/700AP).
2. Adjust ⊘RV2452 (ENG 2W CANCEL)/AT-88 board so that the audio level at TP46 (GND: E11)/AT-88 board is minimum.



http://getMANUAL.com

3-10-3. PROD Level Adjustment

Note

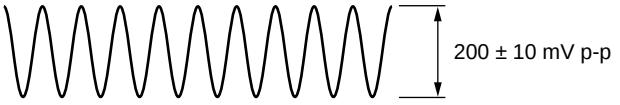
- Perform the following adjustment to much the input level of the camera system.

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- S2241 (INCOM 2 SELECT)/AT-88 board → "2W"

Test point: TP43 (GND: E10)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz, 1 V p-p sine-wave to pin D71 (X), pin B72 (GND)/extension board.
   …Fig-2 (Refer to 3-1-4. Audio connection.)
2. Adjust ⊘RV2211 (PROD 2W LEVEL)/AT-88 board so that the signal level at TP43/AT-88 board is 200 ±10 mV.



3-10-4. PROD CANCEL Adjustment

Note

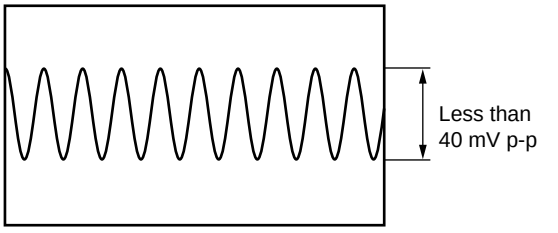
- Perform the following adjustment to much the input level of the camera system.

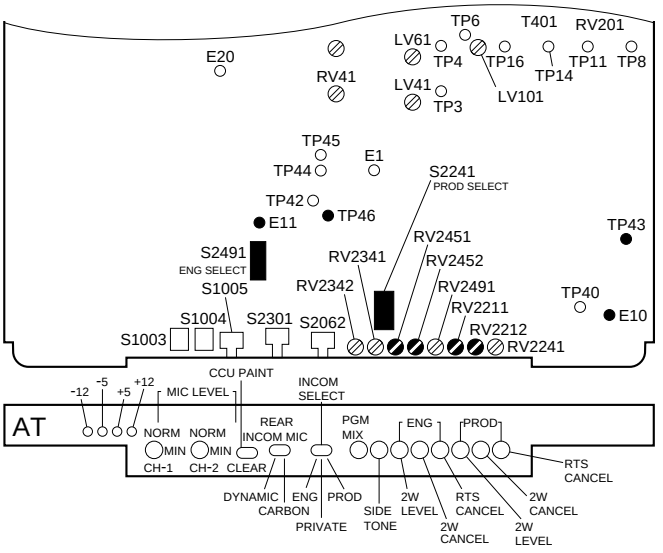
Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC switch/CCU front panel → "CARBON"
- INCOM (PROD/PRIV/ENG) switch/ AT-88 board panel → "PROD"
- S2241 (INCOM 2 SELECT)/AT-88 board → "2W"
- Connect between pin B70 and pin D70/ extension board with 600 Ω resistor.

Test point: TP43 (GND: E10)/AT-88 board

Adjustment Procedure

1. Feed the 1 kHz, 220 mV p-p sine-wave to INCOM connector (CCU-700A/700AP).
2. Adjust ⊘RV2212 (PROD 2W CANCEL)/AT-88 board so that the audio level at TP43 (GND: E10)/AT-88 board is minimum.





(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

3-11. RTS Intercom System Adjustment

3-11-1. ENG RTS CANCEL Adjustment

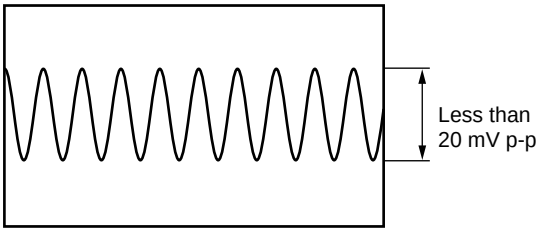
Note

- The following adjustment is necessary when the intercom is RTS system. Also, this information is only for repair purpose.

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC switch/CCU front panel → "CARBON"
- INCOM (PROD/PRIV/ENG) switch/
  AT-88 board panel → "ENG"
- S2491 (INCOM 1 SELECT)/AT-88 board → "RTS"
- Connect between pin D71 and pin B72/extension board with 200 Ω resistor.

Test point: TP46 (GND: E11)/AT-88 board

Adjustment Procedure
1. Feed the 1 kHz, 220 mV p-p sine-wave to INCOM connector (CCU-700A/700AP).
2. Adjust ⊘RV2491 (ENG RTS CANCEL)/AT-88 board so that the audio level at TP46 (GND: E11)/AT-88 board is minimum.



3-11-2. PROD RTS CANCEL Adjustment

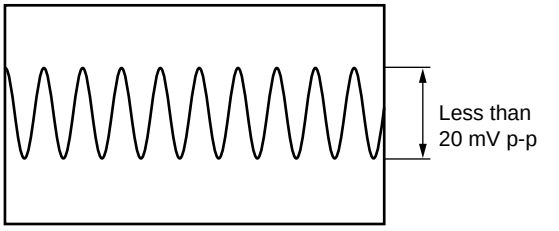
Note

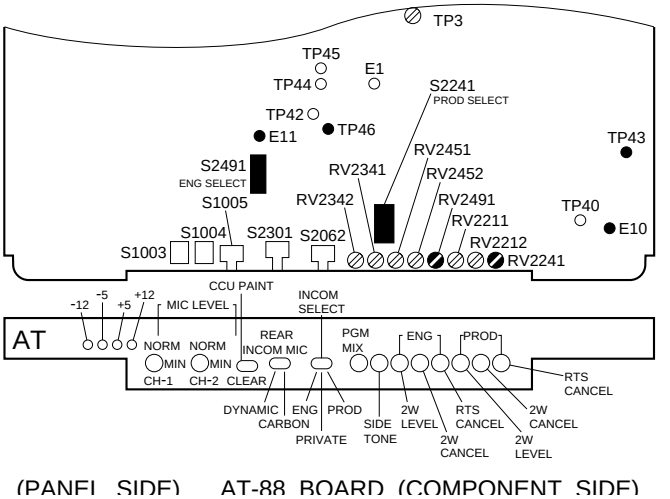
- The following adjustment is necessary when the intercom is RTS system. Also, this information is only for repair purpose.

Rank: C
Equipment: Oscilloscope, Audio generator
To be extended: AT-88 board
Preparation
- MIC switch/CCU front panel → "CARBON"
- INCOM (PROD/PRIV/ENG) switch/
  AT-88 board panel → "PROD"
- S2241 (INCOM 2 SELECT)/AT-88 board → "RTS"
- Connect pin B70 and pin D70/
  extension board with 200 Ω resistor.

Test point: TP43 (GND: E10)/AT-88 board

Adjustment Procedure
1. Feed the 1 kHz, 220 mV p-p sine-wave to INCOM connector (CCU-700A/700AP).
2. Adjust ⊘RV2241 (PROD RTS CANCEL)/AT-88 board so that the audio level at TP43 (GND: E10)/AT-88 board is minimum.





(PANEL SIDE) AT-88 BOARD (COMPONENT SIDE)

3-12. TRIAX Output Voltage Protect Operation Check

Preparation:

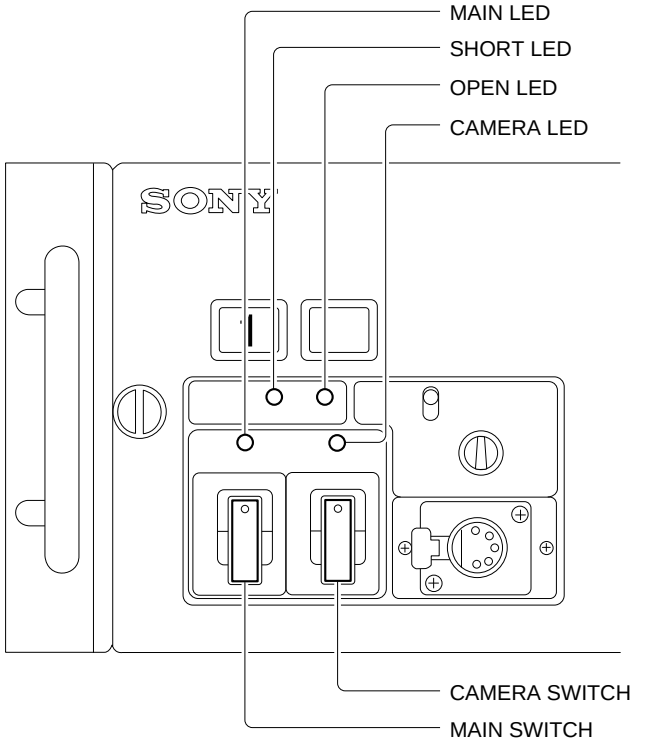
- Connect the CCU-700A/700AP to a video camera with TRIAX cable.

Check:

1. When the power switches of CCU-700A/700AP and video camera is turned on, check that the LEDs of CCU-700A/700AP and video camera light up according to the following table.

Switch			**LED**				
CCU-700A		BVP	CCU				BVP
MAIN	CAMERA	POWER	MAIN	CAMERA	SHORT	OPEN	POWER *1
ON	OFF	OFF	lights up	goes out	goes out	lights up	goes out
ON	OFF	ON	lights up	goes out	goes out	goes out	lights up (red)
ON	ON	OFF	lights up	lights up	goes out	lights up	goes out
ON	ON	ON	lights up	lights up	goes out	goes out	lights up (green)
ON	ON	ON *2	lights up	goes out	goes out	lights up	lights up (red)

*1: When video camera BVP-700/700P is connected.
*2: The condition that the AU board of the video camera is disconnected.



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SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer :

Check the metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 3.5 mA. Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 5.25 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 20 V AC range are suitable. (See Fig. A)

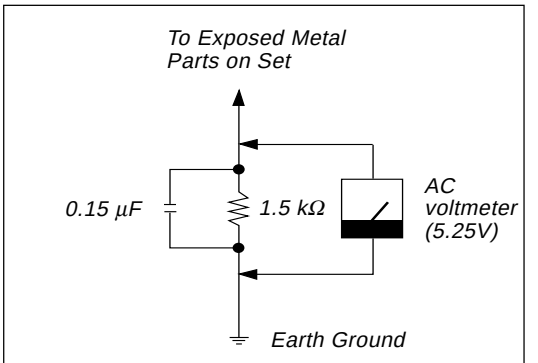

Fig A. Using an AC voltmeter to check AC leakage.

CCU-700A (UC)
CCU-700AP (CE) E
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